

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE;

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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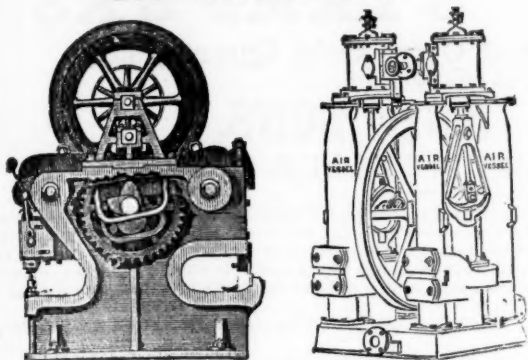
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LONDON, SATURDAY, MARCH 30, 1878.

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PARIS,
BRONZE MEDAL, 1867.



ORDER OF THE CROWN OF PRUSSIA.



FALMOUTH,
SILVER MEDAL, 1867.

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the
Geographical Congress, Paris, 1875—M. Favre, Contractor, having
exhibited the McKean Drill alone as the MODEL BORING MACHINE
for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland
Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

THE MCKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecu-
tive weeks, ending February 7, was 24'90, 27'60, 24'80, 26'10,
28'30, 27'10, 28'40, 28'70 metres. Total advance of south head-
ing during January was 121'30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tun-
nel, the McKean Rock Drill continued to work until the pres-
sure was reduced to one-half atmosphere (7½ lbs.), showing
almost the entire motive force to be available for the blow
against the rock—a result of itself indicating many advantages.

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Machines for the SEVERN TUNNEL; the LONDON AND
NORTH-WESTERN RAILWAY for the FESTINIOG TUN-
NEL; and the BRITISH GOVERNMENT for several Public
Works. A considerable number of Mining Companies are now
using them. Shafts and Galleries are driven at from three to
six times the speed of hand labour, according to the size and
number of machines employed, and with important saving in
cost. The ratio of advantage over hand labour is greatest
where the rock is hardest.

These Machines possess many advantages, which give them
a value unapproached by any other system of Boring Machine.

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USE THROUGHOUT THE WORLD FOR MINING, TUN-
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most portable—the most durable—the most compact—of the
best mechanical device. They contain the fewest parts—have
no weak parts—act without shock upon any of the operat-
ing parts—work with a lower pressure than any other Rock
Drill—may be worked at a higher pressure than any other
—may be run with safety to FIFTEEN HUNDRED STROKES
PER MINUTE—do not require a mechanic to work them—are
the smallest, shortest, and lightest of all machines—will give
the longest feed without change of tool—work with long or
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grit and accidents. The various methods of mounting them
are the most efficient.

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IMPORTANT NOTICE TO MINE PROPRIETORS.

MR. GEORGE GREEN, ENGINEER, ABERYSTWTH
SUPPLIES MACHINES under the above Company's Patents for
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- 1.—THEY ARE CHEAPER THAN ANY OTHER KIND IN FIRST OUTLAY.
- 2.—ONLY ABOUT ONE-FOURTH OF THE SPACE USUALLY OCCUPIED
BY DRESSING-FLOORS IS REQUIRED.
- 3.—FROM 60 TO 70 PER CENT. OF THE LABOUR IN DRESSING, AND
FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.
- 4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN
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They have been supplied to some of the principal mines in the United Kingdom
and abroad—viz.,

The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines;
Darlington, Colberry, Nanthead, and Bollyhope; the Stoucroft and Greyside
Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the
Duke of Buccleuch's); Bewick Partners, Haydon Bridge; the Old Darren, Esqair-
mwyn, and Ystumtuen Mines, in Cardiganshire; Mr. Beaumont's W.B. Mines,
Darlington; also Mr. Sewell, for Argentiferous Copper Mines, Peru; the Bra-
serg Copper Mines, Norway, and Mines in Italy, Germany, United States of
America, and Australia, from all of whom certificates of the complete efficiency of
the system can be had.

WASTE HEAPS, consisting of refuse chate and skimpings of a
former washing, containing a mixture of lead, blende, and sulphur,
DRESSED TO A PROFIT.

Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-
in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly
profit on our Nanthead waste heaps amounted last year to £2600, besides the ma-
chinery being occupied for some months in dressing ore stuff from the mines. Of
course, if it had been wholly engaged in dressing wastes our returns would have
been greater; but it is giving us every satisfaction, and bringing the waste heaps
into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines,
Wanlockhead, Abington, N.B., writing on 30th March, 1876, says—"I have much
pleasure in stating that a full and superior set of your Ore Dressing Machinery has
been at work at these mines for fully a month, and each day as the moving parts
become smoother, and those in charge understand the working of the machinery
better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply,
and satisfactorily than by any other method."

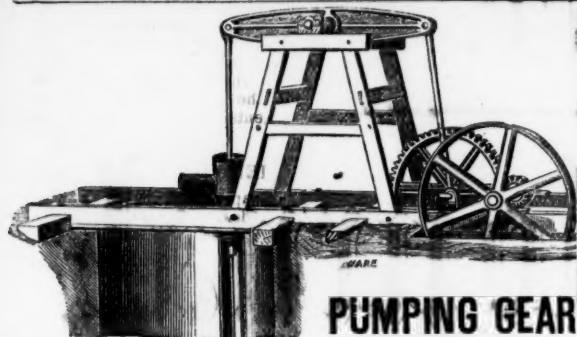
Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines,
says—"Your machinery saves fully one-half on old wages, and vastly more on the
wages we have now to pay. Over and above the saving in cost is the saving in ore,
which is a much short of 10 per cent."

GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The
separation which they make is complete."

Mr. MONTAGUE BEALE says—"It will separate ore, however close
the mechanical mixture, in such a way as no other machines can do."

Mr. C. DODSWORTH says—"It is the very best for the purpose,
and will do for any kind of metallic ore—the very thing so long needed for dress-
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Drawings, specifications, and estimates will be forwarded on application to—
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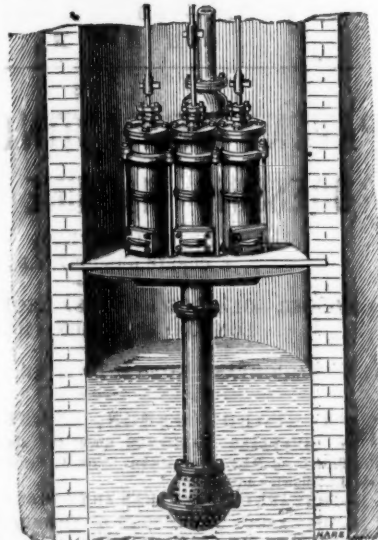
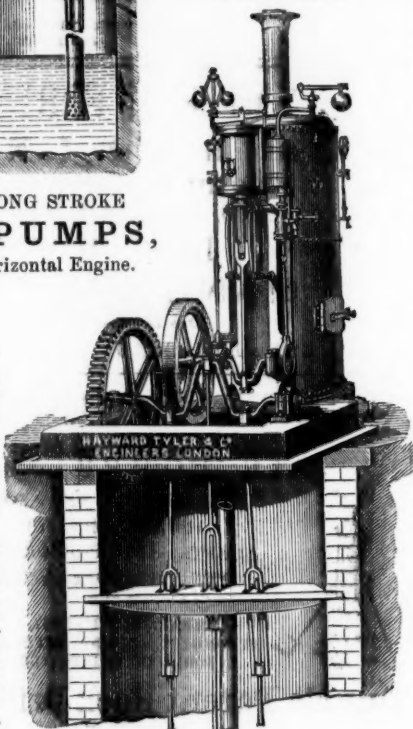
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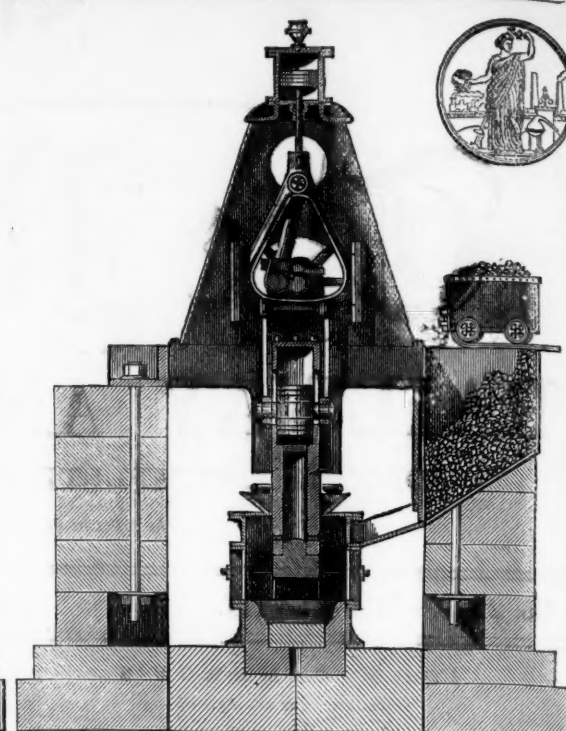
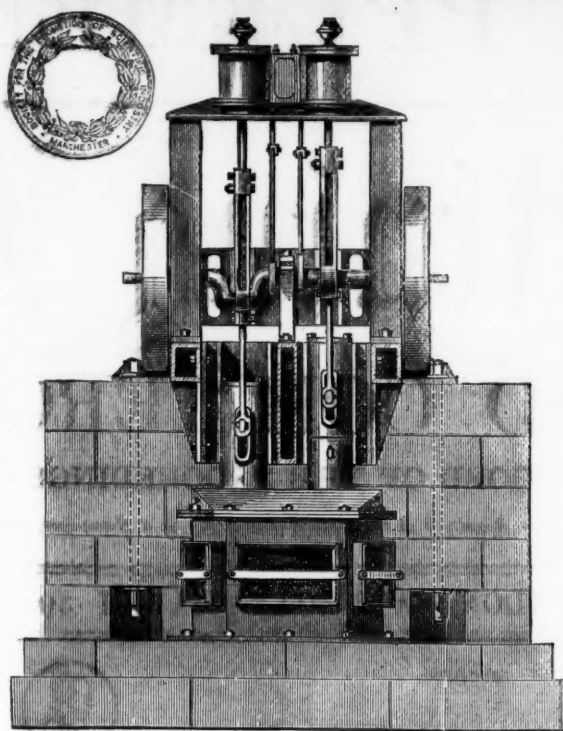
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SHOLL'S PATENT DIRECT-ACTING PNEUMATIC STAMPERS,

For Pulverising Tin and Lead Ores, Gold Quartz, &c.,

SOLE MAKERS FOR CORNWALL,

N. HOLMAN AND SONS,

ST. JUST FOUNDRY, NEAR PENZANCE, CORNWALL.

All objectionable features of "wear and tear" common to the original and existing Pneumatic Stamps (driven by belts) are removed in this patent, and leather glands and stuffing boxes entirely dispensed with, the pneumatic piston being reciprocated into the compressing chambers by direct-action from without. These double machines are guaranteed to be of the capacity of 36 ordinary heads of cam and lifter stamps, and engineers will at once see that, inasmuch as the power is directly applied to its work (without the medium of belts and other gearing), the minimum consumption of coal (all other conditions being equal) must be the result.

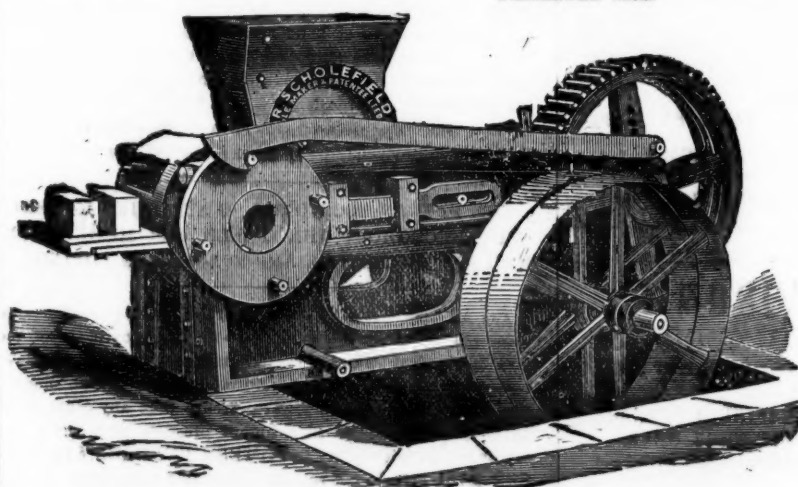
The COST OF THESE MACHINES (including boiler) is about ONE-THIRD OF THE ORIGINAL CAM AND LIFTER STAMPS, to do the same work.

ROTARY STAMPERS SUPPLIED ON THE SAME PRINCIPLE, WITHOUT STUFFING BOXES OR GLANDS, WHERE RUNNING GEAR EXISTS, OR WITH HORIZONTAL CONDENSING ENGINES AND BELTS TO DRIVE THEM, IF PREFERRED.

Also, SOLE MAKERS OF STEPHENS' PATENT PULVERISER. MINING AND OTHER MACHINERY CONSTANTLY ON SALE, NEW AND SECOND-HAND.

R. SCHOLEFIELD'S LATEST PATENT BRICK-MAKING MACHINE.

PATENTED 1873.



R. S. begs to call the attention of all Colliery Owners in particular to his PATENT SEMI-DRY BRICK MACHINE, and the economical method of making bricks by his patent machinery from the refuse that is taken from the pits during the process of coal-getting, which, instead of storing at the pit's mouth (and making acres of valuable land useless) is at once made into bricks at a very small cost, by R. S.'s Patent Brick-making Machinery. If the material is got from the pit hill, the following is about the cost of

production, and the hands required to make 10,000 pressed bricks per day:—

2 men digging, each 4s. per day	...	£8 0 0
1 man grinding, 4s. 6d. per day	...	0 4 6
1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	...	0 2 0
1 boy greasing, 1s. 6d. per day	...	0 1 6
1 engine-man, 5s. per day	...	0 5 0
1 man wheeling bricks from machine to kiln, 4s. per day	...	0 4 0

Total cost of making 10,000 pressed bricks ... £15 0 0, or 2s. 6d. per 1000.

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)

N.B.—Where the material can be used as it comes from the pit, the cost will be reduced in digging. As the above Machinery is particularly adapted for the using up of shale, bind, &c., it will be to the advantage of all Colliery Owners to adopt the use of the said Brick-making Machinery.

THE MACHINES CAN BE SEEN IN OPERATION AT THE WORKS OF THE SOLE MAKER AND PATENTEE DAILY. SCHOLEFIELD'S ENGINEERING & PATENT BRICK MACHINE WORKS. KIRKSTAL ROAD, LEEDS.

British and Foreign Safety Fuse Company, REDRUTH, CORNWALL,

MANUFACTURERS OF

SAFETY FUSE,
FOR MINING AND QUARRYING PURPOSES.

PRICES ON APPLICATION.



Original Correspondence.

UTAH MINES, AND THEIR GEOLOGY—No. II.

(Continued from last week's Journal.)

The American Fork and Silver Lake mining districts commence 2 miles south of Alta and 48 miles south of Salt Lake City; they adjoin Little Cottonwood on the south and south-east, and Snake district on the south and south-west sides. The characteristic geological formation of these districts are the quartzites, schists, and dolomite of the Devonian and Lower Silurian periods. The same overlie the granite of Little Cottonwood on the eastern flank of the great granite ridge of Little Cottonwood. The Silurian and Devonian limestones overlie the quartzite, the first in the head or north-east part, and the latter in the lower or south-west portion of the district, from which they are separated by a thin bed of schist 10 to 40 ft. in thickness. These limestones appear in beds, and assume the most unique forms, ridges, and spires, representing a mass of from 1000 ft. to more than 2000 ft. in thickness. Coming across the divide from Little Cottonwood we observe a fracture in the rocks of considerable extent. On the east side the schists to a thickness of from 1000 ft. to 3000 ft. are predominant; on the west side the younger sandstones prevail. This line of fault, or better said faults, can be distinctly traced from the divide down the canyon to within the vicinity of the Goldseeker Mine, 2 miles below and west of Forest City, a distance of 7 miles, crossing in their course three divides. There are distinctly visible in the upper or eastern part of American Fork three different faults. The first lies almost horizontal, and throws from east to west; the second dislocates, and throws at an angle of plus minus 60° from south-east to north-west, and the third fault dislocating again, the whole diagonal in a throw from north-north-west to south-south-east. The country on either side of and across this line of faults is traversed by numerous fissures and strata veins, which are in turn interrupted and broken through by several extensive porphyry dykes. On Miller Hill above are three large dykes, one coming from the west, another from the north-west, and a third from the north-east, and all running towards the Miller Peak. A great number of these deposits have been opened to a more or less extent, but in no case beyond a depth of 300 ft., although in strike some mines have drifted for more than 1000 ft. on the vein. The reason for the fact that these deposits have not been opened beyond a certain depth is to be found in the extensive dislocations above described, and which seem to be entirely foreign to miners and mineowners here. It will be seen from the above-described dislocations that each successive fault throws the deposit further downward. The extent of all faults added together amount, as I found, to 68 ft. It is very suggestive to connect the dislocations of American Fork with the disturbances which found place during the time of the second upheaval, which are so plainly illustrated in those parts of Cottonwood which are around Emma and Patsy Marley Hills. Here we find beds of limestone and schist upon the granite, dipping at an angle of from 30 to 40° east, a long distance off from the place from which they evidently were originally torn; which step will lead us a step further to suggest the presence of the granite also in American Fork as underlying the sedimentary rock. Granite appears in American Fork in the western and north-western portion in the same magnitude as it appears in the Cottonwoods. The character of the ore in American Fork is to a certain extent the same as in the Cottonwoods. The vein fissures are filled as gangue with broken fragments from the wall rock, with honeycombed quartz-spathes, like fluor-lime and feldspath.

More than 100 miles south-east of Salt Lake City on the eastern flank of the Wasatch range are situated the Sanpete coal mines. The formation in which the coal beds appear is sandstone and bituminous shale of the cretaceous period dipping at an angle of about 9° north-westerly. The coal is what is called and known as lignite. The mines are easy of access, and can be worked by tunnels in such a way as to get principally lump coal with little or no loss in forlorn pillars at all; but without a railroad connecting the mines with the Utah Southern it is impossible for the companies as yet to enter into competition with the eastern coals; but if such a railroad connection were accomplished, and there is no reason whatever why this should not be done easily and cheaply, then coal and coke could be furnished throughout Utah at a considerable less cost than at the present. Selecting the quality of coal from the different coal seams in Sanpete carefully, a very superior coke ought to be produced. The mines of the Harrisburg district are situated about 320 miles south-west of Salt Lake City. The geological formation is stratified red and white marl—sandstone, at places broken up and eroded; here and there the sandstone alternates with thin seams of clay shale, the cementing material between the sandstone is lime. Petrifications of trees, branches, leaves, and ferns, such as are peculiar to the coal formation, are everywhere in great abundance. Mr. Brede-meyer has not the slightest doubt that coal will be found in the vicinity. The Tintic mining district is situated in the Oquirrh range, about 75 miles south of Salt Lake City, and contains about 20 square miles. In the north-west part of the district, including the Eureka and Copperopolis Mines, the geological structure is limestone of the Silurian age. This limestone is considerably changed in its appearance by the great masses of eruptive or igneous rock. In the western portion of the district we observe at the base of the mountain quartzite. The ore in the north-west and western part of the district occurs in true fissures bearing north-east and south-westerly, with a very nearly vertical dip. There appear also numerous gash veins cutting the country rock in different directions, and making the whole appear as a complete network of veins. The ores here are very rebellious, containing lead, copper, gold, silver, bismuth, arsenic, antimony, and pyrites of iron and copper, varying in value from \$20 to \$360 per ton. The veins are here and there barren, the ore appearing in pockets only. In the southern part of the district the mineral-bearing formation is composed of hornblende, porphyry, syenite, and felspar porphyry containing kasson.

The Camp Floyd mining district commences 4 miles south of Ophir (east canyon) and about 30 miles south-west of Salt Lake City. The principal mines are situated around Lewiston, near the summit of and on the western flank of the Oquirrh range, and produce free milling ore, which appears in and is hereditary to a quartzite bed, which bed overlies the older limestone. This limestone composes the centre of the great upheaval in this part of the Oquirrh range. The lower part of the limestone overlies the shale and quartzite beds, and belongs with them to the Silurian age. The older lime beds occupy a space of about 1200 ft. between the quartzite beds. It is very difficult to determine the exact point where the Devonian and carboniferous beds commence, but it is certain that all the beds in which the ore containing quartz appear belong to the Silurian age. The lower limestone is compact and crystalline, of a dark grey colour, shows few fossils, and such as are found—as corals and mollusks—are so changed by crystallisation that their species can only be determined by the most careful examination. The ore-bearing quartz beds have a thickness of from 10 to 68 ft. They have a hard limestone floor, and a roof of calcareous shale, sandstone, and cherty limestone (alternating), and are in their structure and appearance entirely different from those underlying the quartzite. The shaly limestone is rich in fossils of the Devonian and carboniferous ages. The character of the silver-bearing zone or belt of quartzite is very peculiar, and different in every way from a true fissure vein structure, but it shows a distinct stratification of ordinary sandstone or quartzite bedding and it is conformable to the bedding of the country rock throughout the whole district, the hanging wall being a calcareous lime shale and the footwall a dark grey limestone. These distinct lines of the quartzite bedding disappear only where the bed is crushed or brecciated by the upheaval, which facts must appear clearly beyond dispute to every careful observer. This quartzite bed is a permeable stratum of sandstone, made crystalline and vitreous by the heated vapours and chemical reagents from below, before and during the gradual upheaval of the antediluvian ridge; the overlying shale bed being permeable, the mineralised vapours were confined to the permeable and porous sandstone, changing the same slowly into true quartzite, and depositing the

silver, antimony, cinabar, lead, and copper ores in the same. From this it will be seen that the richest ore deposits will be found there, where the quartzite is most broken and crushed under the influence of the upheaval, as the penetrations of the mineral solutions are at those points the easiest. By a close examination of the rock in the crushed quartzite deposited together with the ore, it will appear that the ore forms in many cases only a coating of the fragments, the interior being more or less barren, which indicates that the process of depositing ore continued also subsequent to the upheaval. There is no reason why impregnated beds, formed by sublimation, as the above mentioned ones, should not be as rich, valuable, and extensive as any other ore beds.

The Ophir and Rush Valley districts are situated on the western slope of the Oquirrh range, occupying a very large tract of ground of about 200 square miles. Rush Valley mining district commences at about 32 miles, west south-westerly from Salt Lake City. Ophir mining district adjoins Rush Valley on the south-west line. The formation of country rock in these districts is principally limestone, which appears everywhere in strata, cliffs, reefs, and ledges. These strata of limestone dip with the slope of the hills towards the valley, losing their course gradually in the great upheaval. Last, but not least, comes the so-called Old Reliable or West Mountain mining district. This district commences about 22 miles south-west of Salt Lake City, and is situated on the eastern slope of the Oquirrh range. The principal geological structure of the district is quartzite or vitreous sandstone and dolomite or magnesian limestone. The quartzite appears in beds of great dimensions, with thin seams or lamels of shale which separate the strata at intervals of from 100 to 500 ft. In the southern and south-western and south-eastern portion of the district two beds of limestone, from 100 to 300 ft. in thickness, are observable from the south-east in most irregular foldings and frequent dislocations of the strata, which at present show a general strike of north-east and south-west, and dip north-west at angles varying from 20° to 80°. In several of the breaks and faults large dykes of dioritic and hornblende porphyries appear. They are extraordinary, frequent and well defined in the southern and south-western parts of the district. The presence of these igneous rocks, occupying the breaks of the strata, verifies the origin of such disturbances as have upheaved, folded, and broken the sedimentary beds. Ore deposits appear in this district:—1. As beds between the strata, forming bed or strata veins, examples of which are—Old Telegraph, Spanish Hill, American Flag, Utah, Jordan, Neptune, Revere, and others appearing and situated all in one belt.—2. As contact veins between limestone and quartzite, limestone and shale, quartzite and shale, syenite and quartzite, syenite and limestone. To this class belong the Jordan, Neptune, Grizzly, Ashland, Winamuck and others.—3. As true fissure veins in the syenite porphyry such as appear at the head of Main Bingham Canyon, beyond the Jordan and Neptune Mines.—4. As fissures or gosh's breaking through the strata to which a great number of the Bingham ore deposits belong. It would take too much time and space to explain the nature, character, and the merits of the different classes of ore deposits to their fullest extent and meaning in this manuscript. The quantity and quality of ore are the only standard of value for the miner and the capitalist.

GEOLOGY OF THE PACIFIC COAST.

SIR,—Will you kindly in next week's Journal cause a correction to be noticed in the figures which refer to the level at which the fossils are found in the former shores of the Great Basin. They should have been 5000 ft., and not 500 ft., as these fossil remains are fully 800 ft. above the present level of the Great Salt Lake, which is 4200 ft. above the Pacific. It would appear as it now stands that these fossils were below the level of the lowest depressions of that portion of the American continent. JACKSON BARWISE, Camberwell, March 26.

FRONTINO AND BOLIVIA MINE.

SIR,—There is much dissatisfaction at the tardy way in which the monthly reports from the mines are issued. I believe the reports for December were received last Saturday week, the 16th inst., but have not yet been issued to the shareholders. Why this delay? The Chairman will, doubtless, be closely questioned at the next meeting on this point, as it is obviously unfair to the great majority of the shareholders.—March 28. AN INQUIRER.

THE LONDON COAL SUPPLY.

SIR,—I have perused with deep interest Mr. W. J. Thompson's various letters in the Journal on this head. Mr. Robert Baxter, the chairman of the South Yorkshire and North Derbyshire Coalowners' Association and solicitor to the Great Eastern Railway Company gave evidence before the Committee of the House of Commons, now sitting on the Great Eastern Railway Bill, that the vend of coal from these coal fields is capable of assuming an immense development if a lower rate of transit can be attained to the Metropolis, of which output at present only one-sixteenth part reaches London. Mr. Allport's evidence, the aide-de-camp-general of the late Mr. George Hudson, later a large screw collier owner, and without comparison the most experienced party in Great Britain in coal transit by rail, shows, as general manager of the Midland Railway, that the 9d. per ton throes of the Great Eastern, bearing some analogy to the Muscovite Eastern raid, based upon a partial gradient of 1 in 400, is not exclusively the prerogative of that company, as the Midland possesses an identical gradient for its gigantic coal traffic by the Erewash Valley line, and finds it much more advantageous to work train loads little more than half the tonnage projected by the Great Eastern. The Midland have sunk 3,000,000 ft. in coal wagons, and Mr. Allport shows the fallacy of the Great Eastern aspirations with as great perspicuity as the demoniacal conduct of self-styled "Holy Russia" has been at last laid bare to the uninitiated and waylaid public. With even Sir Henry Tyler's coming to the rescue with 800 to 1200 tons load with consolidated engines at low speed in America is it probable, with so great a loss of life by collisions on the lines conveying coal to London, with even little more than half the train loads proposed by the Great Eastern, and not encountering the line, through a low speed, that Parliament will sanction the bill, promoted ostensibly with the object of effecting a saving of 300,000 ft. a year to the metropolitan coal consumers, an assumption entirely hypothetical and fully disproved in the committee room. Sir Henry, as one of the Great Eastern family, will, I presume, not stake his reputation by maintaining that an English combined passenger coal line to London can be practically and safely worked at the low speed of the American traffic with 800 to 1200 train loads pre-cited. With five through railways in America running parallel to the water, which latter transit is triumphant in the greatest possible degree, the rate per rail per ton per mile is 0.923 cent, whereas per canal, inclusive of dues, the rate is 0.402 cent, and exclusive of canal dues only 0.268 cent, in conformity with the annual report of the State Comptroller of the United States of America.

What more confirmatory evidence is wanting to prove that the present deplorable state of the Yorkshire and Derbyshire coal trade is entirely to be ascribed to the coalowners sending their coal to London by rail at a loss of many shillings per ton as compared with proposed shipment from Keadby, and after defraying cost of rail carriage to the Trent. The saving *via* Keadby would keep the pits in constant work, and the pitmen in the enjoyment of the highest normal rate of wages. It was stated in evidence that heavy goods pay 30s. a ton by rail London to Leeds, which I am informed can be conveyed, including picking up, wharfage at both ends, shipping charges, and delivery, at about 10s. a ton by water, which, were this and other return traffic taken into account, would effect a further important reduction in the coal transit.

In conclusion, the Chairman of the South Yorkshire and North Derbyshire Coalowners' Association, simultaneously solicitor to the Great Eastern Railway Company, promotes a bill in Parliament holding forth a reduction of 9d. per ton in the face of a really practical plan, declared so by the very highest authority in England, to convey coal at a reduction of 9s. per ton from the pit's mouth to

the metropolitan consumers' premises, and from Keadby, minus the railway rate, leaving many shillings saving for water conveyance over Mr. Baxter's rail saving of 9d. per ton. Another Mr. Baxter, of the United States, effects on the Erie Canal a saving of quite a different character, as pre-cited. Let the coalowners ponder seriously over such serious and reliable statements as have been submitted to them. FACTA, NON VERBA.

THE KEARSLEY COLLIERY EXPLOSION.

SIR,—It is stated in a local newspaper that the inquest on the men killed by this explosion is concluded, and that "Mr. Dickinson, Chief Inspector of Mines, said he had no doubt the explosion was caused by gas escaping from a fall of roof in Partington-place." And in reply to the Coroner, he also stated "that there were more fatalities in mines worked with lamps than with naked candles, as with candles miners could better see falls of roof and coal."

This appears to be a strangely garbled jumble of words, and it is difficult to believe that the Chief Inspector has been correctly reported. The case was one of explosion, and it would no doubt have been prevented by the use of lamps, this is the inference that any plain pitman would draw from the evidence. If a seam known to be fiery is worked with naked lights it appears that only a fall is required, or a door or brattice knocked down, to produce the conditions which bring about a serious explosion, the loss of forty or more lives, and great destruction of property. It will not be contended that the use of lamps would have prevented the discovery of the fall, nor that more explosions occur with the use of lamps than with candles. Perhaps it was meant that more casualties from falls of roof occur when lamps are used than when candles are used. This will be admitted by some, and questioned by others, but it is not a very important matter, at any rate in connection with the Kearsley explosion. It is also said that the jury highly praised the management of the colliery, and would not recommend the use of lamps instead of candles. It is not likely, therefore, that much advantage will be gained from the result of the deliberations of those Solons.—Newcastle, March 26. VIEWER.

THE KEARSLEY COLLIERY EXPLOSION.

SIR,—I see that in his evidence respecting the Kearsley Colliery explosion Mr. Joseph Dickinson, Her Majesty's Inspector of Mines, is reported to have said—"A great number of people attributed explosions to a change in the atmosphere. . . . They must discard from their minds any atmospheric change as a cause of these explosions, as it had nothing whatever to do with them. The way such changes were dwelt on was more as an excuse for deficient ventilation than anything else."

It is a pity Mr. Dobson's paper "On the Connection between Revolving Storms and Explosions in Coal Mines," published in the Proceedings of the British Association, Glasgow, 1855, has not been reprinted. It should, by good rights, form one of the examination papers of everyone entrusted with the charge of a colliery, whether as owner, agent, manager, inspector, or in any other capacity. It is also a pity that everyone who can afford it does not keep an aneroid barometer in his house. Such an instrument, with a glass revolving top and index, can be had of excellent quality for about 3l. 10s., and the attentive observation of it morning and evening, and occasionally during the day, for a few weeks would soon convince anyone that the same causes which produce disturbances in the gases of the atmosphere are also producing changes in the gases in a coal mine. And though, I suppose, Mr. Dickinson will deny this, I have no doubt there are people in England who will undertake to prove to him, and make him prove it too, by asking him such questions as whether there is an atmosphere, whether it has weight, whether that is what is meant by pressure of the atmosphere, whether that pressure varies, &c., and whether there are gases in coal mines, whether they are explosive, whether they exude from the coal, &c.

Those who refer to atmospheric disturbance as one of the causes (not by any means the sole cause of accidents in coal mines) attribute these disasters to the operation of elemental agency, with which we are as yet but very imperfectly acquainted, and our knowledge of which, therefore, it is desirable that we should increase. Mr. Dickinson, in denying that the state of the atmosphere has anything to do with colliery explosions, is doing all he can to prevent any enquiry being made in that direction; and in saying, as he is reported to have done, that "the way these changes were dwelt on was more as an excuse for deficient ventilation than anything else," throws the whole blame for them upon those in charge of the mine. I commend this aspect of the case to all concerned, owners, managers, workmen and all, Mr. Dickinson himself included.—Holloway, March 28. WM. H. DANIELS.

DESTRUCTION OF FIRE-DAMP.

SIR,—I have noticed several times recently the destruction of fire damp referred to as a matter with which everyone is supposed to be familiar, yet I have carefully searched in every direction that I can think of and can find no reference whatever to the material by which this destruction is effected. I have found the communications of Mr. Arthur Wall, of Birmingham, which appeared some years since in the *Mining Journal*, and also some references about the same time to the invention of Mr. De Mat, a Frenchman, but no allusion is in any case made to the material employed.

So far as I could judge from the discussion with reference to Mr. Wall's invention there appeared to be some doubt whether the mystery did not exceed the practicability, but I must admit that the experiments mentioned were, without question, in Mr. Wall's favour. In one of these made at James-street, Bedford-row, a large box is stated to have been provided containing a charge of Mr. Wall's fire-damp destroyer. A pipe was connected with one of the gas-fittings in the room, so that the gas could be conducted to the box. The connection was made so that the gas passed into one side of the box whilst an exit was provided on the other. The reporter whom you sent there, with what I should consider idiotic recklessness, applied a lighted wax taper to the exit side, being fully convinced that the gas would ignite. Not only was ignition impossible but the taper was actually blown out.

Now, if this experiment were really *bona fide*, and it can scarcely be imagined that pumping machinery or anything of that kind would have been introduced into the box, it proves beyond doubt that the explosive character of the gas was destroyed; and what I should now like to know is by what means the destruction was effected? If the fire-damp can really be absorbed, and of course assuming that the expense is not so great as to render it impracticable to use it, I think the invention should certainly receive attention, and if the inventors of the present day commence where Mr. Wall left off it is not unreasonable to anticipate that something good will result.—Barnsley, March 26. PHILO.

PRIZE BLOWPIPE APPARATUS.

SIR,—The suggestion of "Blowpipe" in last week's Journal that Letcher's guinea box of blowpipe apparatus may be as useful, practically speaking, as a reduced Lindke is no doubt correct; for, although a tolerable blowpipist, I will not be so conceited as to call myself a pyrologist, which might be mistaken for fiery-talker, or something of the kind, I cannot see the necessity of wasting even a guinea for any field set of blowpipe apparatus. The professor under whom I studied told a fellow-student of mine who had just bought one of Griffin's sets, which are beyond question the best and cheapest in the market, that the purchase afforded another evidence of the truth of the old saying—that certain people and their money are soon parted. The professor drew from his pocket a handsome little morocco cigar-case in which he carried, neatly packed, what he assured us were ample reagents and apparatus for a fortnight's work in the field (eight hours exploring a day), excepting the wax-lights, which he said he would only use where no other light was obtainable, as you could usually get a common candle or a lamp where you slept. The cost of the cigar-case was 2s. 6d., and of the contents 2s. 6d., and practical men need have nothing more. Those

who are fastidious about apparatus are seldom worth their salt as workmen.—*March 25.* BLOWPIST.

ROCK DRILLS—THE CHALLENGE.

SIR.—We notice in the Supplement to the Journal of last week the remarks of Messrs. Le Gros, Mayne, Leaver, and Co. upon the correspondence published March 16, and beg to refer them to their challenge of Feb. 22, which states they are prepared to run their drills "for a month against the Barrow, or any other drill, in any mine." This was the challenge we accepted, and which has been declined by Messrs. Le Gros, Mayne, Leaver, and Co. We do not shrink from the contest, as we know the merits of our drill, and feel quite satisfied that a contest between the Ingersoll and Roanhead alone would be found both "exhaustive and instructive." All we ask for such a contest is fair play, and we think this is sufficiently shown by our letter of Jan. 26, offering to drive our drills with whatever plant Messrs. Le Gros, Mayne, Leaver, and Co., may use, even if they choose to put down their own. Their challenge and our acceptance referred to *drills*, not plant and compressors. Perhaps, too, Messrs. Le Gros, Mayne, Leaver, and Co. will inform us if Capt. Nicholls, of St. Austell Consols, is their agent in Cornwall, as we understand this is the case, and if so their choice of that mine might be accounted for. SALMON BARNES AND CO.
Ulverston, March 27.

ROCK-DRILLS.

SIR.—We notice in the Supplement to last week's Journal an account of Mr. J. G. Cranston's rock-drill and air-compressors, and observe that the Roanhead Mines appear among the addresses given of places where they are in every day use. We are not, however, quite sure if this statement refers to the rock-drill or compressor only. If to the latter we cordially affirm that the machine is a good one, and works to our entire satisfaction, but if the reference includes the rock-drill we must in justice contradict the statement. We tried Mr. Cranston's drill underground, but found it was no "miner's tool"; its springs and ratchets so constantly required it to be sent to the surface for repairs that we discarded it altogether, and adopted the drill manufactured by Messrs. Salmon Barnes and Co., which was first tried in our Roanhead Mine, and called after it. We have found this drill to be much more effective, less liable to get out of order, and a better tool in every respect.
Ulverston, March 28. KENNEDY BROTHERS.

WELDING CAST-STEEL BORERS.

SIR.—Knowing that you are always ready to help the working miner, I will thank you to publish the enclosed, and also any answers that may be sent, as it will be greatly valued by many hard working and persevering miners who cannot well afford, these bad times, to pay a smith, but would do the work ourselves if we knew what was required:—

"If any of the numerous readers will kindly send for publication in the Journal the composition used, or what is needed with the treatment for welding cast-steel borers, they would confer a favour to many who are working like myself searching for minerals, and can manage to sharpen our own tools but cannot put our short borers together."—*March 27.* WORKING MINER.

THE MINING INTERESTS OF GREAT BRITAIN.

SIR.—When we compare the state of metallic mining at the present day with that of the year 1872, say five years ago, we cannot but be struck with the sad havoc inflicted on this branch of native industry consequent on the contentions of capital and labour, the political contentions arising out of the Eastern Question, the sad depression and contraction of trade and commerce, coupled with the discovery of tin ores in Australia, and the consequent diminution of prices of the article in our market. Lead mines have also suffered greatly from lowering prices of that metal, and the all but universal stagnation in trade and manufacture, not only here, but on the Continent, and throughout the whole of America, Australia, Canada, and the civilised world in general. Still, in the face of these all but unprecedented misfortunes and disasters it is most refreshing to refer to a few mines which maintain their own, and even show an advance in inherent worth and revenue over this trying period of five years. The Van paid 42,000*l.* in 1872, and 42,000*l.* in 1877; Great Laxey paid 4500*l.* in 1872, and 30,000*l.* in 1877; while the Hultafall, Pateley Bridge, West Pateley Bridge, and West Craven Moor, the first in Sweden, and the other three situate in Yorkshire, with Monydd Gorddu, Cambrian, Blaen Caelan, Temple, Tyn-y-Fron, Grogwinion, and Blwch promise to revive the prestige and profitable renown of Cardiganshire. But, as we pointed out years ago, the rapid exhaustion of Tankerville and Roman Gravels indicated early falling off; the first gave dividends of 14,400*l.*, and the latter 12,000*l.* in the year 1872, but none have been declared by either since 1876; in regard to Tankerville, and may last year in regard to Roman Gravels. These mines have fallen off 130,000*l.* each in market value, and evidently sell high enough now.

For the year 1872, five years ago, tin mines were in the ascendant, and at the close of the year they bore the following favourable contrast with their present lamentable position. For that year Dolcoath gave dividends amounting to 45,645*l.*, and commanded a market value of 67*l.* a share. The price has fallen off to 32*l.*, and the dividends dwindled down to 1064*l.* quarterly. Tincroft from 48,000*l.* dividends, have receded to 1500*l.* quarterly, and the price of the property fallen from 342,000*l.* to 70,000*l.* Carn Brea in 1872 divided profits of 15,500*l.*, and sold at 150,000*l.* The profits have been nil since February, 1874. The company has a large accumulated debt, and the commercial value has fallen off to 42,000*l.*, with a very remote chance of getting out of debt. Kitty (St. Agnes) has declared no dividend since 1874, against 8500*l.* in 1872, and the market value has dropped from 64,425*l.* to 8000*l.* Trumpet Conso's gave dividends of 8000*l.* in 1872, and has since been abandoned as worthless. East Pool paid 7200*l.* in 1872, and has fallen down to 2*l.* a share four months, and the price receded from 15*l.* to 9*l.* a share, and high enough now for any prospects that the mine or the prices of tin exhibits of an improving character. Phoenix in 1872 declared a dividend of 4700*l.*, and since encountered considerable expenditure and losses. The shares, 6000 in 1872, with 4*l.* 3s. paid up, are now 12,000 in number, and 5*l.* 7s. 3d. called up. The market value in 1872 was 90,000*l.*, and it now stands at 55,000*l.*, or just 15,650*l.* over the increased capital of 39,350*l.* called up under the name of Phoenix and West Phoenix Mines. Phoenix was formerly a rich copper mine, and in the aggregate gave profits of 239,950*l.*

New Pembroke in 1872 declared dividends of 2240*l.*, but has disappeared among the dead men, resulting from depressed prices of tin, commercial depression, and the utter prostration of speculative enterprise. Wheal Basset, in 512 shares, 5*l.* 2s. 6d. paid up, sold in 1872 for 60*l.* a share, and gave dividends of 60 per cent, since which there have been several calls, and the finance is still in arrear. The gross dividends to the close of 1872 were 326,656*l.*, on an outlay of 2624*l.* Botallack gave 16*l.* dividends in 1872, and worked at a heavy loss for nearly the whole period since. West Frances, from dividends of 2818*l.*, has merged into a losing concern. Terras has ceased to exist, as also North Levant; these mines for the year 1872 paid respectively 2775*l.* and 2800*l.*, and sold at 75,000*l.* and 32,000*l.* each. Penhalla, from 2500*l.*, has ceased to be profitable. Wheal Jane, which divided 2048*l.*, is now simply making both ends meet. Wheal Owles paid 24*l.* 10s. a share in 1872, and is now profitless. Grenville, from a dividend mine, has passed into heavy calls. South Carn Brea, from paying dividends, merged first into calls and then became abandoned. Providence, that paid 117,180*l.* dividends, on a capital of 11,569*l.*, has ceased to be worked. Lovell, which paid 1113*l.* in 1872, still continues working, yet without gains to shareholders. Wheal Margaret, formerly an important and very profitable mine, with Castle-an-Dinns, Wheal Kitty, Whisper, East Balliswidden, and Spearn Moor, have all been abandoned; as well as Great Work, St. Ives Consols, and many other great and formerly rich and prosperous tin mines. In fact, there is scarcely any department of the mining interest, excepting iron mines, which have experienced during the period of five years—1872 to 1877—such a marked and ruinous collapse as that of Cornish tin mining.

There cannot be a question that even war will have a beneficial

effect on trade, manufacture, and commerce, for nothing can prove so detrimental and crippling as ruling suspense and uncertainty in every department of the nation's products and industries. The markets both at home and abroad are wretchedly paralysed, and our productions reduced to most abnormal dimensions, while the actions and conduct of both masters and workmen are devoid of all *esprit*, or even the slightest approach to confidence; thus capital and labour fail to fructify, hence the vitality of progress is absorbed, or rendered puerile and inoperative through inanity and distrust.

Mining pursuits of all others demand active enterprise, intelligent perseverance, and indomitable confidence in the future. The hidden chambers of wealth embedded in the earth require earnest and diligent application to become discovered and rendered profitable whenever brought to light. Hence the chronic distrust of the investing public, coupled with the low prices of copper, tin, and lead, very seriously affects and depresses metallic mines. It is, therefore, with great satisfaction that we refer to the Mellanear as a recent prize in copper mining, and of Peavor, Eliza, Agar, and West Godolphin in regard to tin mining, and of Pateley Bridge, where the lode at the 130 yields 6 to 7 tons of lead to the fathom; of Monydd Gorddu, wherein important discoveries have been made; of Blaen Caelan, where the lode at the deepest points is worth 30*l.* a fathom; Tyn-y-fon, where the lode is proved highly productive for 70 or 80 fms. in length; while Great Laxey, Van, Grogwinion, and West Chiverton are each and all expansive. Thus the future of mining is not without promise; hence let us hope and trust in an early and important revival in the prices of metals, when dividends must pour in in abundance, for mines and mining never were more productive and permanent in character than at present.

R. TREDINICK,
Consulting Mining Engineer and Dealer in Stocks and Shares.
Exchange, 66, Coleman-street, London, March 26.

PUBLIC COMPANIES, AND LIQUIDATION.

SIR.—The combination of "ignorance with conceit," to use "Creditor's" own words, was never better illustrated than in the half-column of nonsense that gentleman favoured us with in last week's Journal. It may be that "Creditor" is a loser by some company—not an uncommon thing in these days. How many there are who, taking no trouble to find out the financial position of a company before giving credit, when it is being wound up abuse the liquidator—often because they can find no other official to expend their wrath upon. To be expected to answer for the faults and mismanagement of directors and secretaries, which have eventually brought a company into liquidation, is what I have myself before now as a liquidator experienced, but it seems it has been reserved for "Creditor," "in order to prevent the ruin of joint-stock enterprise altogether," to come forward at the very nick of time with "a very short enactment" for the Legislature to adopt in order to "secure that object," unless, as he humanely says, "anything can be done to annihilate the class (accountants) altogether." Before saying a word or so on the proposed enactment, it might be as well to remind "Creditor" that, as a rule, companies have generally expended their capital and proved themselves unable to pay their debts before going into liquidation or the liquidator has had anything to do with them. The ruin and starvation of hundreds of families he speak of has been caused long before then. Surely "Creditor" is confusing the beginning with the end, and crediting the liquidator with the delinquencies of the promoter.

And now just a few words on the proposed "very short enactment." The new lock for the stable-door after the horse has been stolen. "Creditor" says it should be provided that "in the event of any company going into liquidation the secretary of such company shall be the official liquidator, and that the remuneration of such liquidator shall in no case exceed an amount equal to the salary received by him as secretary during the six months preceding the meeting at which the liquidation is determined on, unless he proves to the satisfaction of the Court of Bankruptcy (which would be the best tribunal to decide) that he has used all diligence in the winding-up, but that it was not practicable to close within the restricted time." In the first place I would remind "Creditor" that public companies are not wound-up in the Court of Bankruptcy, but in the Court of Chancery, and although "Creditor" may think one court should be troubled with the business of another, the Legislature may think differently. Further, "the secretary of such company shall be the official liquidator." The italics are mine. Should there have been anything rather dark in the past this might be very good for the secretary. But all being right, suppose the secretary having another appointment in view, or from other causes, does not wish to be liquidator. Would not this compulsory clause be an infringement on the liberty of the subject? Again, as to remuneration "equal to the salary received by him as secretary during the six months preceding the meeting at which the liquidation is decided on." Now, I have myself two separate instances in which the secretaries received nothing at all during the last six months of office from want of funds. What would "Creditor" do then? Finally, the short enactment finishes with the words "within the restricted time." But what that restricted time is we are not told. The "very short enactment" would, I imagine, require a very long amendment to be intelligible.

But, perhaps, the best part of "Creditor's" letter is the middle paragraph, the one in which he alludes to accountants in general, not liquidators in particular—men who have no special knowledge, who "pump" clerks, and charge for taking lessons; who undo work done, and persistently ignore Quarter-days; who will make up balance-sheets to the 13th of April (why not the 1st?), and have so much respect for directors that when one marries commemorate the event by dating a balance-sheet on the happy day, foregoing for that purpose even the mystic 13th of April—and for all this charging fees. Truly these men must be worthy of "annihilation." Where are they to be found? In the land of fiction I expect, from whence "Creditor" has drawn so many of his facts.

A LONDON ACCOUNTANT.

BLAEN CAELAN MINE.

SIR.—I notice some correspondence on the above mine appearing from time to time in the Journal, and having had some slight knowledge of the mine in times past, perhaps you will kindly permit me to make a few remarks. About ten years ago, when the mine was in full swing under Mr. Balcombe's management, a considerable quantity of lead was sold from comparatively shallow depths (about 500 tons I believe), and at that time the stratum of ground was not what would be considered congenial for mineral. I recollect the late Capt. Edward Williams, of Dyliffe, a very experienced miner, remarking that after about 30 fms. sinking they would reach the blue killas, and they would then have either a very rich mine or a very poor one—meaning, I took it, that the lode would either become wider and stronger, or split up and disordered. I gather from the present agent's reports that the former is the case, and my humble opinion is that the lode will continue to improve till 100 fms. has been reached. I limit myself to 100 fms., because I do not think that depth will be reached in this generation. The lead ore at Blaen Caelan has every appearance of lasting; it is like the Bron-floyd, Dyliffe, and Van ores, all mines that have proved rich in depth.

The mine is favourably situated for working, and comparatively easy of access. In my time it was rather short for water, but there was a favourable conformation of ground for forming a large reservoir, at some little expense. I recollect an opening being made on the south lode, a little east of Blwch-y-Garreg, by the neighbouring company, which was sunk about 4 fms., and rich stones of lead were discovered, but it was found they were outside their boundary (i.e., on Blaen Caelan), and they filled it up again, after picking the rich ore out, with the waste. This south lode is to be seen in the cutting made for the road to Esqair-hir, and ought to be proved by a cross-cut from the river—not, as I saw them doing once, close under the road, and then in a most erratic way; my plan would doubtless entail a longer cross-cut, but it would ensure a thorough exploration, and when the lode was cut would give all the greater backs.

I have been told that further west than the present mine good ore was found at surface, but whilst the company have got a good lode, improving in depth every foot, they are wise not to have too

many irons in the fire. A judicious outlay of the capital they appear to have on hand will, after a little patience, enable them to enter into a permanent dividend-paying state, keeping always a good reserve of ore in front of them, and this is better than having a large sale of ore and then relapsing for a year or two, although it may not suit mines which want to force their shares on the market. My opinion of Blaen Caelan is that it is a good, *bona fide*, lasting mine, not overburdened with too large a capital, and consequently capable of yielding a handsome return to its shareholders.
Machynlleth, March 26.

MINING AS A PROFITABLE MEANS OF INVESTMENT.

SIR.—Probably when the cloud has passed off which has long been hovering over the whole commerce of the country a revival in this kind of enterprise will take place, resulting as in times past in enriching those who have the forethought to make a selection at the present low prices. A better opportunity for the outlay of a small amount of capital cannot be remembered. The slightest reaction in the price of metals must give to those who have the courage to invest a profit rarely exceeded. During the panic of 1847 and 1848 Devon Great Consols shares (before which they sold for 600*l.* and over) went down to 180*l.*; on the reaction the rise was rapid until they reached their former value, since which its history is common to all. South Frances shares were relinquished as valueless, and soon afterwards advanced to 500*l.* each. Treavean shares at one time were wholly ignored after an outlay of 32*l.* 10s. per 98th share, when a discovery was made, and they rose to 2700*l.* each, and gave in dividends about 4500*l.* each share. Strange to say, adjoining this mine there is one similarly circumstanced selling for comparatively nothing (about 2*l.* each) with prospects equal and possessing the same elements that were presented in Treavean at the same depth, yet such is the apathy of the public that it is almost forgotten. Probably ere long the mining public will be taken by surprise at the discovery of a deposit of copper ore equal to its rich neighbour. This is one instance out of many known to the writer. Dolcoath is a proof of what may be done by a persevering company; the shares (198ths) about 30 years ago were relinquished as valueless, and shortly after were sold (after subdivision) at 2000*l.* per original, since which they have given the shareholders close upon half-a-million profit. There are young mines around this one with continued perseverance, and a further small outlay, likely to be the source of great success to those who hold to the end. The investor need not, therefore, send his money to "develop" the mining fields of America while we have such a vast amount of unexplored wealth in our own little home domain.
Cornwall, March 25. CHAS. BAWDEN.

MONYDD GORDDU LEAD MINE.

SIR.—It was with much pleasure I read Mr. Pell's very complete and graphic description of these mines in last week's Journal. There is no question but that Monydd Gorddu will in a little time develop into a grand mine, and more than fulfil the most sanguine opinions formed of it. I expect in a few weeks we shall intersect the great ore body at the 24 below adit, and seeing that our engine-shaft is more than two-thirds sunk towards a 36, it will be understood that great efforts are being made to lay open plenty of ground to keep the new and powerful machinery fully occupied when completed. The great hindrance towards opening the mine hitherto has been the short supply of water-power. The large reservoir now being constructed at Craig-y-pistyll, and which is rapidly draining to completion will remedy this drawback, and give us ample water-power at all seasons of the year to work vigorously.
Monydd Gorddu, March 26. JAMES G. GREEN, Manager.

WHEAL UNY, AND ITS MANAGEMENT.

SIR.—The strictures of Mr. James Tresidder, mining agent, on the management of this mine call for a few remarks. In the first place he has the manliness to put his name to the letter published in the Supplement to last week's Journal; but at the same time if he recently visited the mine, as he says he has, he might, I think, without loss of dignity, have been courteous enough to have pointed out to me or to the agents on the mine the serious defects in the management before making such sweeping charges in a public paper. I hold a large interest in the mine, and would have been glad to have availed myself of his great mining experience, and should be only too glad to adopt his or any other plan, provided I could make the mine pay in these depressed times. I have not the honour of knowing this mining agent from North Devon. If, however, Mr. Tresidder wishes to show his superior ability as a mining agent, and save his calls, I think I can assist him. Perhaps he will remember that in 1874 there was an anonymous letter published in the Journal in very much the same style as that now issued. I then publicly stated through your columns that to settle the matter I was prepared to set the whole of the tin levings at 13s. 4d. out of 1*l.* before it left the mine, and to publish the results. After some little delay the levings were taken by a company of working men, with a tin dresser as the active partner. After several months' working the first sale was made in August, 1874, and the amount realised was 4*l.* 19s. 3d. The party has since dwindled down to one man, who has stuck to it admirably, and has made large slime pits and fixed frames similar to those recommended by Mr. James Tresidder, and the sale made for the month ending March 9, 1878, amounted to 6*l.* 10s. 6d., which at two-thirds tribute left 4*l.* 7s. to the tin levings dresser to pay his working expenses. It should be stated this tributer has probably spent 100*l.* on the floors out of his own pocket, and the agreement is that we give or take two months to terminate the contract. If Mr. Tresidder is anxious to save his calls, and show his skill as a mining agent, I can easily give the man in possession the stipulated notice, and give Mr. Tresidder the preference as a shareholder to take up these tin levings on similar terms.

Mr. Tresidder draws on his imagination in stating that the pitwork from one engine has been sold without the knowledge of the shareholders; we have sold nothing except old iron. This sagacious mining agent says the mine should not be flooded from the surrounding mines, as there is no communication below adit; if he has ever been down a mine, and knows anything of geology or the nature of lodes, he could not fail to observe that water does flow into the mines, especially when the lodes are porous. As a matter of fact, there has been a half-dozen mines abandoned contiguous or directly adjoining Wheal Uny, and every one of these had at least one pumping engine to drain the water, and yet not one of the abandoned mines referred to is full of water to the adit; it must be, therefore, percolating into some other mine. We regret to find that our coal bills have increased considerably since the stoppage of the surrounding mines, and we cannot well dispose of our pitwork, as Mr. Tresidder mildly hints.

Again, another alleged source of mismanagement is that there have been only 10 or 12 fms. of shafts sunk. Allow me to state that a new engine-shaft has been sunk over 160 fms. below the adit, or nearly 200 fms. from surface, besides a new double skip-road drawing shaft to nearly the same depth, as well as other shafts. We have, therefore, sunk in the aggregate within the time referred to in his letter over 400 fms. in shafts. This mining agent ignores the fact that tin from this very mine, which realised 93*l.* 10s. per ton some time since, but previous to the last meeting we could not get more than 36*l.* 5s. per ton, and although our last fortnight's sale was 22 tons, about double the quantity that the mine formerly yielded, yet the amount of money was comparatively small; this was, however, supplemented by a month's profit of 2*l.* 3s. 6d. on the tin levings, but it is to be hoped this will be considerably increased if your corresponding mining agent takes it in hand. No one deplores the making of calls more than I do, for I feel it is not at all pleasant, to say the least of it. The calls I admit are tedious, but the shareholders have generally responded without grumbling. We have, however, kept nothing back nor incurred any debts at the bankers without the knowledge of the shareholders. I was not aware till now that the meeting of shareholders was postponed from a three to a four months' account simply because this mining agent, Mr. Tresidder, called at the London office. I cannot say the number of shares he holds in the mine (doubtless a very few), but I was under

LEAD MINES.

Any competent geologist or geologist is provided by extensive workings on the back. Interesting pieces of mining ground having some of the general features of the usual conditions of lead-bearing lodes is a limestone formation, and at the excavation of the surface and underground, proving that rich, continued uninterrupted from the surface to a still greater depth, with attendant profits. The conclusion that one well constructed and certain to result in a very profitable investment East Craven Moor is pre-eminently a most promising, prospective mine, and the world's largest.

LEAD MINING IN SCOTLAND.

KESWICK UNITED SILVER-LEAD MINES COMPANY.

Your correspondent, who has occupied your valuable space with enquiries for information which he professes to be ignorant of, although in his possession for years, can have his copy of the directors' report and balance-sheet for 1877 either by sending for it or by furnishing me with his present address. For your information I may perhaps be allowed to add that the directors have not been paid one shilling for fees for the past six years, while during that time they, along with two or three of the shareholders, have advanced without security or the payment of interest upwards of 4000*l.* to carry on operations in the mines.

THE SECRETARY.

King-street, Finsbury, March 27.

LEAD MINES IN THE NORTH—GRASSINGTON, PATELEY
BRIDGE, WEST PATELEY BRIDGE, &c.

LEAD MINES IN THE NORTH—GRASSINGTON, PATELEY
BRIDGE, WEST PATELEY BRIDGE, &c.

SIR,—When I wrote you last week I little thought my anticipations would have been so soon verified by the great discovery since made in the Cockhill Mine, the property of the Pateley Bridge Lead Mines and Smelting Company. This goes far to confirm what I then stated, "that with present appliances and the energy and skill brought to bear this district should prove the richest in the United Kingdom."

It was a similar discovery to this some years since that brought the Grassington Mines into notoriety, and enabled the management to return to the Duke of Devonshire sums varying from 50,000*l.* to 70,000*l.* per annum for many years.

This vein, called here "The Rake," has returned shallow large deposits of ore in Cockhill, and now it is proved beyond a doubt that the ore holds down rich below the base of the hill, or water level. This should be most cheering to the enterprising proprietors of the West Pateley Bridge Mines, as they have a run of more than half-a-mile upon this lode, and I shall be much mistaken if the present workings at their Middle shaft do not, after all, show that they are opening out this same Rake vein, which is now valued in Cockhill at 6 to 7 tons of lead ore per fathom.

I am led to think that this is the case from the fact that the West Pateley Bridge Mines in the deepest workings at this part of the property are free of water, and that the whole character of the lode is the same, and produces precisely the same minerals in both properties. I believe the agent differs in this opinion, as he thinks they are upon the North Rake vein. This may be, as the lodes run close together; if so, from the discoveries already made in the West Pateley Bridge Mines, they certainly have prospects of an exceptional value, as they have yet to develop the Rake vein, now so rich in Pateley Bridge Mines.

MINE AGENT.

LEAD MINES IN THE NORTH—WEST PATELEY LEAD MINES, &c.

SIR.—“Old Miner” and “Mine Agent” are doing good service in directing the attention of mining investors to this important district in the West Riding of Yorkshire. With facilities not to be found elsewhere, Greenhow Hill must inevitably become the most prominent, as it will assuredly be the most profitable, mining locality in the North of England.

Greenhow Hill has gristones on its northern slope alternating with beds of shale, while on the south rises the great mass of mountain limestone to a height of 1400 feet above the sea level. The ridge (says Professor Phillips) rises into two eminences called Greenhow and Coldstones; from both of them the beds dip rapidly to the north and south, the dip diminishing as the dip from the axis augments. Many metalliferous veins cross the ridge, and are traversed by north and south lines of irregular cavities called gulphs, which are full of broken portions of the bordering rock. Shales and grits of great thickness, enclosing a thin limestone, envelope on all sides the oval mass of Greenhow limestone, which is more than 100 fms. thick, the bottom having never been reached.

In these valleys are the levels of the principal mines, and here also a great part of the mining population is located. All the ground bears evidence of mine workings, old or new, and the surface is spread with heaps of stony matter which have come from the bowels of the earth, among which are immense quantities of fine white sand.

The mines have been worked from time immemorial, some having between eight and nine miles of horse levels, which are travelled by horses in bringing out the ore. Sometimes the lead is found embedded in clay, when it is easily won by the pick, but most frequently in the limestone.

Among the mines recently started West Pateley, which is being very energetically developed, will soon make its mark in this celebrated locality. The property is an extensive one, having, as I was informed, an area of nearly a mile square. It contains many rich lodes, and, although vigorous operations were not commenced until towards the fall of last year, enough, it would seem, has been disclosed to encourage a spirited development, and upon an extensive scale, judged by the work now in progress.

A liberal expedient is adopted at these mines by which all the explorations are greatly accelerated. Each miner is paid a premium in excess of the ordinary wage by accomplishing a certain amount of work in a stipulated period. This has been found to

LEAD MINES IN THE NORTH.

SIR,—Your correspondent, "Mine Agent," has given us some valuable information about the lead mines in the Pateley Bridge or Craven district; but from my knowledge of the neighbourhood—and I am not speaking without some experience—every effort should be directed to opening out the mines in depth. Sufficient has been done to demonstrate the highly mineralised character of the lodes near to and at surface, but the valuable discoveries made at the deepest points yet reached are guarantees of continued and increasing richness. While I take exception to some of "Mine Agent's" statements I would urge the desirability of sinking with all possible speed, and open out the mines in depth, when I have no doubt great results will be realised.

MINER.

THE ASSHETON LEAD MINING COMPANY.

Str.—I think the shareholders have great cause of complaint against the directors of this company. Is it true the returns of lead now being made exceed those when the shares were selling in the market at 18s., or nearly 20 times the present quoted value? If so, why do the directors withhold the information? No body of gentlemen have been better supported by shareholders, and unless they furnish us with the information, to which we have a perfect right, we must convene a special meeting to ascertain the actual position of the mine.

Far be it from me even to hint that such is the case, but it may be possible that outside shareholders are mulcted of their shares because ignorant of what the mine is doing.

As the Stock Exchange element is strong in this company, it may be that shares are being purchased from those who, if better informed, would themselves be buyers instead of sellers.

HINGSTON DOWN CONSOLS.

SIR.—The correspondence published in the Journal some little time since between Capt. Richards, of Devon Great Consols, and two of the directors of Hingston Down Consols, has led to another peculiar step on the part of the promoters of the movement with regard to the recent changes in the management of the above mine. During the period of the severe illness of Capt. Richards his son devoted the whole of his time and attention to his father's affairs, and all matters of business passed through his hands. The official correspondence was conducted by him in accordance with his father's instructions, and as is usual in similar circumstances the letters were signed by him on his father's behalf.

Founded on these simple facts a report has been issued from a London office, and authenticated by the signature of a secretary of mines, to the effect that it was within the knowledge of certain authorities that the letters in the recent correspondence were neither written nor signed by Capt. Richards. The imputation conveyed in this statement being so unmistakable, and the intent so palpable, an explanation or a retraction of the charge has been called for by the solicitor engaged in the case. In the answer received it is admitted that the statement was made, but that no insinuation was intended. It now remains to be seen if no insinuation was meant to be conveyed what was the object of the promulgation of the statement.—*March 26.* ————— A SHAREHOLDER.

COED-MAWR POOL MINE

Sir,—A great discovery was made at this mine last week; we cut a splendid lode west in the 28 fm. level, greater in value than anything ever seen in this part of the country; the present end is worth about 80% per fathom. This is the more valuable owing to the length of ground opened up in the 20 fm. level, 50 fms. ahead of the present end, giving us 50 fms. of solid ground, with 8 fms. of backs. In the level east of Mallett shaft we have a rich lode with 8 fms. of backs for more than 60 fms. This week driving the cross-cut north in the 20 we have cut a lode running parallel with the main lode, at present worth fully 20% the fathom; this discovery is all the more valuable as the ground is all maiden ground, giving us 20 fms. up to surface for stoping; these are new discoveries. All other points in the mine are improving, and promise well for the owners. I have sampled this week again, which makes the second since January. Another important feature is that the lead from this mine commands a much higher price than the ore from any other of the many mines in this district, and from 40s. to 50s. per ton more was realised at the last sale in January, many of the other mines selling at the same time. I believe this mine will very shortly become one of the best in Wales.

Llanrwst, March 27. ————— *W. McFARLANE.*

CORNISH SILVER LEAD MINES.

SIR,—There is evidently a disposition to pay more attention to silver-lead mines in Cornwall than has been for the last three or four years. Several mines have been started recently, and notably amongst these is the Great Wheal Rodd Silver-Lead, which has just been brought out as a limited company, with a capital of 12,000*l.*, in 2*½* shares, and there is every prospect of its becoming a rich mine; it is in the neighbourhood of the celebrated Wheal Mary Ann and Trelawny Silver-Lead Mines, and the ore taken from it is of precisely the same character. A deep adit level has been taken up from the large stream of water which flows through this sett, and is driven about 28 fms. It is expected that the lode will be intersected in about three weeks. Budge's shaft, which has been sunk 12 fms., will then be unwatered, and the deep adit level continued on the course of the lode as rapidly as possible, where backs of more than 30 fms. will be gained. Capt. George, of Marke Valley Mine, says,—“The lode is 3 ft. wide, and in the present bottom is composed of gossan, friable spar, flookan, mundic, and silver-lead ore; the stratum is a light clay-slate, and is very favourable for exploring.” Very favourable reports have also been received from three other well-known mine managers.—*Liskeard, March 27.* J. W. C.

A SINGULAR CHARACTER.

STR.—In some of the mines and other works in Cornwall we sometimes come in contact with persons who exhibit evidences of mental capacity equal to that of persons in the higher walks of life. It is thought by some that, naturally, the position or circumstances of birth make no difference in respect to mental power—that mind is not generated; so that all commence life just alike. I know that as amongst the poor, so amongst the rich, there are imbeciles and blockheads as well as clever men. The individual to whom I wish to refer was the son of a very poor man—I think a miner in the Helston district. The first time I knew him he was an engine-man at a mine, a situation he filled till his death. Men in that situation have a great deal of leisure—especially if a boy is employed to feed the fires—which is generally spent in idleness, but which this man spent in study. He learned at the engine-house, and at his home, arithmetic, geometry, trigonometry, astronomy, and some other sciences. He also knew something of music, and kept a piano to indulge his taste in that science. He also made his own shoes, and built his own houses. He was what is usually called a "Jack of all trades." When the tithe commutation was in progress he contracted to prepare a map of a parish, the landowners agreeing to pay him 5*l.* per month while the work was in hand. This, however, he did not complete. He was a good liver, so far as I knew, having maintained a good reputation through life. He was a member of a Christian Church, and desired to become a lay helper in the ministry; but the society to which he belonged, not deeming him qualified, always objected to his use of the pulpit. One evening, however, the appointed minister being absent, he stepped into the pulpit unsolicited and commenced the service, delivered a text, and preached, so to speak, a sermon about five minutes in length. It was a signal break-down—an experimental instruction to him to keep within his proper sphere. He never renewed the attempt. His death was sudden and accidental. He was engaged in repairing

ing his house, when the ladder on which he was standing, and which he himself had made, broke, and he fell on a stone, and died instantly. *March 21.* OBSERVER.

D'ERESBY MOUNTAIN MINE.

SIR,—I notice in Messrs. W. Reynolds and Co.'s Financial Monthly for March the following, which requires correction:—"Capt. Bennetts is the manager of D'Eresby Mountain Mine; by his advice and under his guidance the success of that mine has been assured, and the shares of that company have risen from 10s. to 60s. each in price since November last." Now, Sir, as one who knows I beg to differ with Messrs. Reynolds and Co. respecting the above paragraph in relation to the management of this mine, and would advise them in future, for their own personal interest, to issue facts which will bear the light of day, and I would say that had the directors and shareholders as a body been satisfied with the management of Captain Bennetts he would have been retained as the agent to superintend the working of the mine. After due consideration the choice fell on Capt. John Roberts, of the Vale of Conway Lead Mine, in whom the proprietors have the greatest confidence, feeling assured that in such hands their property is in safe keeping. Such statements issued in circulars I consider are likely to prove injurious not only to the manager, who has been appointed to that post for nearly a year, but to the property, unless contradicted. I may further say we look to Captain Roberts, the manager, for the proper working of the mine, and the results which one and all are in hopes will follow his explorations as soon as he gets the crushing and dressing machinery erected, and dressing-floors properly laid out.

NUNQUAM NON PARATUS.

SOUTH DE ERESBY MOUNTAIN.

SIR,—You opened your columns on Saturday last to a gentleman who, in my opinion, abused your well-known courtesy in publishing legitimate criticisms on any subject bearing on mining. As this gentleman has brought a direct charge of dishonesty against me I hope you will give me a like space to meet that charge. Captain Roberts states that he sent to my firm for a copy of our circular, and we had not "the common honesty to send him a copy, or return the stamps he enclosed." He then points the moral by saying, "What does this imply? I need not say." Now, Sir, it implies that either Capt. Roberts does not use ordinary care in getting his letters posted, or he deserves the epithet he wishes to brand us with, for we have never received any communication from Capt. John Roberts, and he would have shown better taste had he renewed his application before making a charge so serious in the columns of your widely-read paper. In regard to the arguments of more public interest he is just as much at sea.

He first confounds our circular with the prospectus, and we should be unjust to the directors if we did not say they had no knowledge whatever of the issue of our circular until Capt. Roberts' letter appeared. Again, he misstates our premises, and proves on the false premises he sets up that, according to our argument, the working of this mine would show a loss instead of a profit. We stated that 1 ton of lead per fathom, according to high mining authorities, and notably that of Capt. Roberts' employer, would at 13s. per ton show a net profit of 8s. per fathom.

No one knows better than he does that, although some part of the 2½ miles of lodes contained in South de Eresby Mountain is worth nothing, a great portion of it would probably be worth 3 tons per fathom, as is the case in the same lodes worked by the D'Eresby Mountain Company. Capt. Roberts' disclaimer "that he did not wish to depreciate the real value of the mine," but simply rushed into print in the interest of the public, would be amusing were it not likely to prejudice the minds of your readers against one of the most promising mining sets in North Wales. W. REYNOLDS.

London, March 28.

SOUTH DE ERESBY MOUNTAIN.

SIR,—I have carefully perused the letter which appeared on this subject in last Saturday's Journal, but I cannot determine whether the confounding of the company's prospectus with the statements made in Messrs. Reynolds's Financial Monthly is the result of wilfulness or of carelessness. Capt. Roberts suggests, probably unwittingly, that an improper use has been made in the company's prospectus of the reports written by himself and Capt. Bennetts. It is only necessary for me to give this statement an emphatic denial. The prospectus and the reports appear in the Journal of the 2nd inst. The fallacy of Captain Roberts' statement can be shown as clearly by a perusal of them as can the fallacy of the assertion (already pointed out by me) that South de Eresby Mountain Mine is not on D'Eresby Mountain by a personal inspection of the property. I may add that I do not in any way desire to detract from the real value of D'Eresby Mountain or D'Eresby Consols sett, but I am satisfied South de Eresby will prove second to neither of them. It possesses more important intersections, and its geological formation is indicative of great wealth. J. SMITH, Secretary.

Queen Victoria-street, March 28.

KINGSTON CONSOLS, AND TYLLWYD MINE.

SIR,—I am glad to learn that Mr. Forrest has been unanimously reappointed secretary of the New Tyllwyd Mining Company by a general meeting of shareholders, and that the directors who dismissed him have been forced to retire. It now remains for the Kingston Consols Mining Company to reappoint him as secretary of that company. I consider him to be an active and able secretary. All the time he was with Kingston Consols the mine improved from month to month in its sales of ore, but since he ceased his connection the ore sales have decreased. I only hope, if the Kingston directors fail to reappoint him, that he will submit his whole case to the shareholders without delay, and he may depend upon us carrying him through as triumphantly in the Kingston as we have done in the Tyllwyd. I trust neither the shareholders nor Mr. Forrest will let this matter rest.

March 28. A SHAREHOLDER IN BOTH COMPANIES.

COLLAPSE OF THE KIT HILL TUNNEL SCHEME.

SIR,—This great undertaking, that was started a few months since with such a blast of trumpets, has suddenly collapsed. Is it possible that such a great enterprise as this should be started without any company or capital? Looking at the affair from a practical standpoint, one cannot help thinking that there never was any real intention of putting the tunnel through. The idea of starting an adit level, 7 feet by 4, and calling it a tunnel; I suppose you could not say less than 10 feet by 8, and then the adits are started both sides from the bottom of the valley. I want to know where is all the stuff from the so-called tunnel to be dumped? and how is all the water therefrom to be utilised to such an advantage as held out in the prospectus?—*Callington, March 27.* A COUSIN JACK.

[For remainder of Original Correspondence, see to-day's Journal.]

ANNEALING FURNACES.—The invention of Mr. GEORGE HATTON, of Kidderminster, consists in constructing annealing furnaces in such manner that the trolley or truck, which forms the movable bottom of the furnace, and carries the articles to be annealed, shall be kept cool and not enclosed in the furnace, whilst at the same time the furnace is kept air-tight. With this view he constructs a trolley, the body of which is filled in with fire-brick blocks, and the iron frame or body is furnished on the angles formed by the bottom and sides with a beaded flange, which flange when the trolley is in action engages in a metal groove formed in a curb plate supporting the inner walls of the furnace; the flange and groove are not in immediate contact with each other, but there is a space between them to receive sand, which acts as a packing medium, and prevents cold air from entering the furnace whilst at work; the trolley or movable bottom being in place, the doors close on to the fire-brick blocks on the top of the trolley, level with the furnace floor, leaving the roadway and wheels supporting each trolley or movable bottom open to the outer air, so that a free current passes underneath.

Meetings of Public Companies.

D'ERESBY MOUNTAIN MINING COMPANY.

A meeting of shareholders was held at the offices, Gracechurch-street, on Thursday.—Mr. J. Y. WATSON, F.G.S., in the chair. Mr. C. B. PARRY (secretary) read the notice calling the meeting.

The CHAIRMAN read the following report of the directors:—"The directors, at their first general meeting, have to congratulate the shareholders upon having one of the most promising mines in Wales. When the company was formed for working the chief point of interest was the No. 3 adit level, which had to be driven about 20 fms. to get under a course of ore which had yielded large quantities of lead in No. 2 adit; several fathoms have been driven here, and the lode has produced good lead, and is still an important point in the mine. This, however, important as it is, was thrown into the shade a few months ago by the discovery of the course of ore in the great Gorse lode in the No. 4 adit, upon which, since November last, six men have broken 15 0 tons of leadstuff. Some months ago two of the directors, Messrs. Watson and Lamb, visited the mine, and having fixed upon the spot for the dressing-floors near the mouth of No. 4 adit, they ordered the level to be cleared, and a tramway laid along it for bringing the ores raised in No. 3 and other levels above, down to the dressing-floors, and in making this tramway in No. 4 the course of ore on the Gorse lode was discovered. Considerably below this level is the deep adit No. 5, and this is being cleaned out to get under the course of ore in No. 4, and may shortly result in important discoveries. Mr. Lamb has been to the mine again within the last few days, and expresses his opinion that the agents have rather undervalued the Gorse lode. He adds, that if No. 5 level turns out as good as expected the present value of the mine would be doubled. There are other important lodes in the sett which will be developed in due course.

It will thus be seen that the mine is a series of five adits, driven into a hill, where they intersect well known rich lodes, running some east and west and some north and south, and these from No. 5 adit will have a depth in backs of 100 fms. Thus the mine can be worked without pumping machinery, and at little cost compared with most mines, as the ores have only to be broken and trammed direct to the dressing-floors. These floors are in course of preparation. Two water-wheels, a stone-breaker and crusher have been purchased, and the directors hope in a few months, and without any call upon the shareholders for more money, to be making good and profitable returns. The statement of accounts which will be submitted to you on February 28, of 1878, 18s. 6d. per ton, is a great asset as the prospects are at No. 4 level, the agents in their report said from what they have already seen in No. 5 they should not be surprised if they have a course of lead there superior to anything yet seen in the mine. Mr. Ashmead, the auditor, offers himself for re-election.

The CHAIRMAN said there was one point not mentioned in the report to which he would refer—the subdivision of the shares. It had been represented to the directors that it would be advisable to subdivide the capital of the company into 10,240 shares of 1s. each, instead of being as now 512 shares of 20s. each. But he found there was a strong feeling on the part of many shareholders against subdividing them, and certainly his own opinion was that they should remain as they were. He might mention that Mr. Jehu Hitchens had just returned from the mine, and reported that he had seen nothing like it since he was in the Van, that the returns of lead could only be limited by the dressing powers, and that they would shortly be in a position to make large profits. (Hear, hear.) Investors, therefore, did not see why they should subdivide the shares just to suit the convenience of a few. (Hear, hear.)

Mr. C. B. PARRY then read the following report from the agents:—"March 26.—The following is a brief, yet detailed, report of the work which has been accomplished on the mine, together with its present position and future prospects. We forward also plans and sections, which will illustrate the report, and give you an idea of the mine, which words could not do.—No. 1 Adit: We have driven and stope here altogether 13 fms. 5 ft. 6 in. on a splendid lode of blende mixed with lead (galena and carbonate), and as rich gossan as can be seen. This was suspended till we could obtain better facilities for working by bringing in the deeper levels and dressing by putting up machinery.—No. 2 Adit: This we have cleared for a distance of 80 fms., and also cleared and secured a winze about 5 fms. deep. We have at this level in the roof some good stoping ground for lead and blende, which will be available for working as soon as we can get a communication between this and the No. 3 adit, and as far as we can judge from what we can learn from the appearance of the ground, and also the last men that worked there, we shall have better stoping in the bottom.—No. 3 Adit: Here we have put in 80 fms. of tramway, and have driven 14 fms. 4 ft. 6 in. This we have commenced with a view of getting under the winze at No. 2, and effecting the communication aforesaid. We have driven for some distance, as you are aware, through a very hard and poor rock, but for the last 5 or 6 fms. driving we have had a lode varying in value from ½ ton to 1½ ton to the fathom of lead. The breast of the end at the present moment is rather poor, but there is a leader of lead in the bottom about 6 in. wide. We have about 1 fm. more to reach the perpendicular of the winze. When this ground is spent we intend putting up a rise to communicate with the winze, which will give us facilities for stoping both here and at No. 2.

No. 4 Adit: Here we have cleared in all about 300 fms. of levels, and have laid the tramway from the intersection of the Hafna lode to the dressing-floors—a distance of 212 fms. We have driven on the Hafna lode 8 fms. 4 ft. 6 in. This lode is 12 ft. wide, and has an appearance especially characteristic of lead, and on the foot wall it has been productive of as much as ½ to 1 ton of lead per fathom. We might here keep this in your remembrance—that this lode has been abundantly productive in the Hafna Old Mine on the west, and we have here a run of ½ mile or more in this sett, and as we drive east from this point we shall intersect the lode in No. 3 (Fuchasall lode), Harker's lode, and several others, so that we shall not only be proving the value of this lode, but we shall be cutting those lodes aforesaid at a deeper point than they have yet been seen. We consider the driving of this level to be a splendid venture, and one that can scarcely fail to give entire satisfaction. On the Gorse lode we have cleared about 100 fms. of levels and crosscuts, and have discovered a fine course of ore just on the intersection of the east and west lode. This lode produces about 3 tons of lead per fathom, and on the north end of the discovery it is worth 5 tons of blende, and if this continues as it has been, the lode will be available for working as soon as we can get a communication with constant work. This lode has been cross-cut about 40 fms. south of this point from one side to the other, showing its width to be at that place from 10 to 12 fms. On the heading side, at this point, a winze has been sunk, which we cleared, as far as we could go down for want of ventilation, about 8 fms. through a good mixture of lead and blende, and which would pay for working when a communication is made between No. 5.

No. 5 Adit: Tradition informs us that in the bottom of this level, as well as above, there are fine crosses of lead, but we wanted more trustworthy dates before venturing to involve the expense of clearing it in order to prove whether it is true or otherwise. On driving the level to No. 4 to correspond so nearly to that as described by the old men at No. 5, as also a close examination of the debris heaps, gave us confidence in the undertaking, and with your advice we commenced in earnest clearing from the extreme outlet, after having cleared up one of the shafts as far as we could go with the water. We cleared and made new about 80 fms. of the level, letting down a great quantity of water, and hoping that we might proceed with the clearing at a point nearer the course of ore. We resumed the clearing of the shaft, and we found still stronger evidence that the lode was rich at this point when last worked, as there are splendid rocks of almost solid lead mixed up with the debris. This shaft seems to have been sunk on the hanging side of the lode, and the lode still stands not far from the surface, and should not be surprised if we get here a course of lead superior to anything that we have yet seen in the mine. We are now under the necessity of clearing another shaft, which we shall accomplish in a few days, and hope that this will so let down the water as to enable us to go through the level for a great distance. We are getting on rapidly with the building of the crusher-house, and the masons have to be off the ground in six weeks more. We shall be able, previous to that time, to begin to fix the water-wheel, which is just ready for erection, and afterwards proceed immediately with the putting in the crusher, and laying out the floors, which will take from three to four months from the present time. We are still growing more confident as to the future prosperity of the mine, as our first reports, which were considered by some to be over sanguine, are daily being verified.—JOHN ROBERTS, WILLIAM BENNETT.

Mr. DAUKES said he was sure the meeting would be pleased if Mr. Jehu Hitchens, one of the oldest and most experienced miners of the day, would give his opinion regarding the mine. (Hear, hear.) Mr. JEHU HITCHINS said he had just visited the property, and fully endorsed everything which had been said regarding the excellent prospects of the mine. He might sum up what he had to say by stating that it was his opinion that the returns of lead from the lode, provided the lode turned out as he expected (which he saw no reason to doubt), would be only limited by the power of dressing. They could break it in almost any quantity—any reasonable quantity. There seemed to be two different kinds of lead—there was a fine-grained lead, which was very heavy, and that must be 200 fms. from where they cut the large lode, and were now working upon. There was evidence that the lode was very large and strong, with very large rocks of lead and blende.

Mr. DAUKES: I believe there is wonderful gossan there? Mr. J. HITCHINS: There is everything indicative of produce, and you have the produce too. I was one of those who inspected the Van Mine, and advised the purchase of the mine. I and Mr. Watson were underground there together, and I have seen nothing to equal this since I saw that. (Cheers.)

The CHAIRMAN: It was in consequence of Mr. Hitchens and myself being underground in the Van that I thought it would be satisfactory if he went down to this mine, and so at my request he went down on Monday.

Mr. C. B. PARRY then read the accounts.

The CHAIRMAN then moved that the directors' and agents' reports, and also the accounts, be adopted, printed, and circulated.—Mr. DAUKES seconded the resolution, which was put and carried.

On the motion of the CHAIRMAN, Mr. Ashmead was re-elected auditor for the current year, with a remuneration of 5 guineas.

Mr. F. F. WILSON asked how long it would take to clear up the No. 5 adit?—Mr. J. HITCHINS said that would depend to a great extent upon how much it had fallen together. They were getting on as fast as they could.

The CHAIRMAN said they had really got through all the difficulties.—Mr. J. HITCHINS said it had not been cleared for the last 25 years, so they might naturally suppose there were some obstructions to overcome, although the water was flowing through it now.

Mr. F. F. WILSON: But it is cleared to the first of these shafts? Mr. J. HITCHINS: There is a shaft cleared up which I have pressed them to make a permanent shaft in case there should be an obstruction in the adit. For some time you will be able to raise as much lead as you can dress.

Mr. LAMB said the shaft was 80 fathoms from No. 4 level.

The CHAIRMAN: The shallow shaft has been cleared.

Mr. J. H. CROFTS said that with his friends the Baron de Crèvecoeur and M. Feillet, two French gentlemen who held a considerable stake in the mine, and who were present, he was leaving for the mine that very evening, accompanied by one of the first mining engineers of Paris, in the employ of the French Government, with the view of satisfying themselves, at their own expense, as to the richness and value of D'Eresby Mountain and some other mines in the neighbourhood.

The CHAIRMAN: I need scarcely say that we shall be happy to give those gentlemen every facility for thoroughly examining the mine, and only regret the Baron did not take my advice and visit it some months ago.

Mr. J. H. CROFTS said that as the business of the ordinary meeting was over, he begged to propose a cordial vote of thanks to the Chairman and directors.

The resolution was seconded, and carried unanimously.

The meeting was then made special, for the purpose of passing (if approved) the following resolution:—"That the present capital of the company, instead of being in 512 shares of 20s. each, be and is hereby sub-divided into 10,240 shares of 1s. each."

The CHAIRMAN said he had already expressed his feeling on the subject—that it was not advisable to sub-divide the shares, but it was a matter entirely for the meeting to deal with. To be in order, he would formally move the resolution, and then if it were objected to an amendment could be formally proposed and passed.

Mr. LAMB said he would second the resolution, in order that it might be formally laid before the meeting.

A short conversation ensued, in which Mr. CROFTS, Mr. DAUKES, and other shareholders expressed an opinion that it was not advisable to subdivide the shares.

Baron de CREVECOEUR, speaking on behalf of French shareholders, expressed a similar opinion, and regretted he had not taken the Chairman's advice and gone into the mine earlier.

Mr. FOSTER, with the view of having the question definitely settled, moved, as an amendment, that the shares remain as they are.

Mr. CROFTS seconded the amendment, which was put, and carried unanimously.—The meeting then broke up.

WHEEL OWLES MINING COMPANY.

At the meeting, on March 22, the accounts for sixteen weeks ending Dec. 1 showed a balance now against the adventurers of 22,448s. 7s. 1d. A call of 12s. 10s. per share was made. Work performed during the sixteen weeks:—118 fms. 3 ft. 3 in. driven in levels, and 43 ft. 2 ft. 8 in. sunk in shafts and winzes; 36 passes stoping for tin on tubwork; 10 pitches working on tribute. The following report was read:—

March 22.—It will be observed that the cost is 200l. in excess of the previous account, which was intimated would be the case in my last report. We have managed to keep up our returns within a fraction, the whole of which has been disposed of at an average of 37 1/2 s. per ton, being 35s. less than last time. Our loss on the sixteen weeks' working, in addition to the bankers' charges, is shown in the financial statement as over 400l.; but we have copper, pitch-blende, carbonate of bismuth, and arsenic unsold, which I think will cover that amount. I scarcely know how we could have done so well with the present miserably low price of tin. We have kept going our exploring parties, and have expended more money in opening than in the previous sixteen weeks. I am glad to add that the mine is in thorough working order, and every item charged up. I think our cost will be less next time, and we shall try to keep up the returns of tin.

Wheal Edward.—Our prospects in this part have improved since my last report. The 90 west, 116 west, and 136 west are opening paying tin ground. The 128 west, 148 west, and 160 east are driving, but are unproductive. Wheal Edward Cliff.—This part is still looking promising. In the 50 cross-cut south we have cut a small lode, which contains a little yellow copper. We have no discovery in the cross cut at the 60, but are still hopeful. The 60 east is opening fair tin ground. In the 60 west the lode is poor, though large and promising. We have abandoned operations at the 65, as this level is so little below the 60, and are pushing with all possible speed the 60 west winze, which is now sunk 19 fms. below the 60. The whole distance has been in good tin ground, with a little copper; the lode at present working, which is opening fair tin ground. In this part we have mined some pitch-blende, a portion of which we have sold at about 550s. per ton. We think, however, of converting the bulk into uranum yellow, which we hope to be able to do at a considerable profit.

West Wheal Owles.—I regret to say that since my last report no improvement worth noticing has taken place. In our operations seaward at the 45 and 55 we have not yet been able to discover the Cardogoda lode since it intersected the great Spar lode. At the 45 we are cross-cutting north, and at the 55 we now purpose extending west instead of east, hoping to be successful at one point or the other. We have not yet cut the lode in the 35 cross-cut north. The lode in the 55 east is large and better defined, though unproductive. In the 45 west we have found a small quantity of carbonate of bismuth, a very rare mineral, which we purpose reducing to the metallic state. I fear our returns will fall off materially from this part.

I am hopeful that we shall soon have a better price for tin. The total available stock is lessening, in spite of political uncertainty, and I have a strong impression that the Australian colonies will show a great falling off in their production this year as compared with last.—RICHARD BOYNS, Manager.

TIN MINING—CORNISH MINERS.

After Wheal Owles meeting, on Friday, the adventurers dined together, when Capt. BOYNS, the Chairman, said—As to the price of tin, he was thoroughly satisfied that in no part of the world could tin be profitably produced at anything like its present price. If they could have a fair rise they would make a profit. The quantities of tin raised in the Australian colonies last year was enough to make a mining man's hair stand on end. It was something marvellous, but he did not believe that anything like the same quantity would come to England this year; 1878 would, he thought, show a falling off, at least, a quarter part. But it had been said by some smelters that with anything like a material rise the supply would be increased at once. He was not so certain about that from what he had seen and read, the surface of Australia for gold and tin had been turned over and over to an immense extent; and they had it on the authority of such a man as Mr. Mufford, who states that of the hundreds of tinworks in Tasmania not one of them was paying a dividend. Recently Mr. Mufford had written to Capt. Boyns with respect to this subject. In reply to the question could tin be produced now in Tasmania at the present price, he answered that no public company had yet paid a dividend, and tin could only be raised at a profit by a few co-operative parties. The average cost of transit for ore was 10s. per ton. As to the second question, whether the production for the present year would equal the claims already worked out, he replied that he thought not, as many of the claims are already worked out, and many others nearly so. The remainder had reached the climax, and commenced falling off. And, unless other discoveries are made in some unexplored districts, the returns for the present year must be considerably less than the past year. Tin would be produced in Tasmania for many years to come, undoubtedly, but in much less quantities. The returns from the different works during the last three months are very much below what they were for the same period in 1876. Should tin reach 70s. or 80s. per ton there were several places that could be worked at a small profit, and would, no doubt, lengths out the period of its production. In conclusion, the Chairman mentioned that Mr. William Wellington, who was sent out to Australia four times by Messrs. Bolitho, told him, in all sincerity that he would make a grand thing out of stocking the tin, for the tin in Queensland was being worked out as fast as possible; but all their calculations had been beaten.

Mr. CHENHALLS, in a feeling speech, proposed "The Purser," assuring him of their fullest sympathy during the stormy times he had passed through, and of their desire to relieve him of anxiety as much as possible.—The CHAIRMAN said he was much obliged for this kind expression of sympathy, and rejoiced to be able to say that he had had the full support and confidence of the adventurers from the beginning.

The toast of "The Visitors" was next, with much cordiality, given, and Mr. HEARD (Truro) was the first to respond. For four years, he said, Cornish mining had been under such a cloud as no one could possibly have dreamt of a few years ago. Still, they had one very great consolation as Cornishmen—they had stuck to their text. In all the respectably conducted mines of Cornwall nearly all the leading adventurers had stuck to the bails during all this trouble. At Wheal Bassett a call of nearly 2s. per share was made, and this made 2000l. paid up that mine since it entered the calling list; and yet 75 per cent. of the adventurers had stuck to the mine in all its trouble, and still hoped for a better day. As a rule, the mines of Cornwall had been honestly worked; but in this mine, he thought, there had been causes of complaint. The accounts should, as in this mine, be properly charged up, and the very greatest economy should be exercised in every department. This, he believed, was being done, and if fortune should smile on them again the best mines in the county would be in a far better position to make profit than they had ever been before. Let them honestly and rigidly carry out their duties as adventurers, and pay as fair a price for labour as they could possibly do, and then if success did not come they would, at least, have the satisfaction of knowing that they had deserved it.

Mr. H. WADDINGTON, of London, representing Mr. Weston, the

GAS MOTORS.—Engines or motors operated by the expansion due to the explosion of a mixture of inflammable gas, or vapour and air, have recently been coming into greater favour, and some improvements in their construction have recently been invented by Messrs. WILSON, DUNCAN, and WILSON, of Liverpool, their object being to produce a cheap and efficient motor in which the full effect of the explosion shall be utilised. To ensure a thorough admixture or diffusion of the inflammable gas, or vapour and air, to be exploded in the cylinder they so arrange the motor or engine that one stroke of the piston shall draw inflammable gas, or vapour and air, into one end of the cylinder through a number of small holes or perforations, whilst another stroke shall cause such mixed gas, or vapour and air, to pass through a number of holes or perforations to the other end of the cylinder, where it is exploded by any ordinary or desired means used in gas engines. Valves are used to prevent the return of the mixed gas, or vapour and air, after it has once entered the cylinder. Several other improvements are likewise suggested. In order that the mixed gas or vapour and air may pass through a large number of holes or perforations in its passage into the cylinder, they form the said holes or perforations in the cylinder cover and in the piston, and thus are enabled to obtain a great number of holes or perforations, so as to facilitate the admixture and diffusion of the gases. To ensure that the explosion of the mixed gases in the cylinder shall be of the most efficient kind, the size and number of holes or perforations for the supply of gas, or vapour and air, are so regulated that the gas and air shall be drawn into the cylinder during the stroke of the piston in the requisite proportions, and further they so arrange the governor that it shall act only so as to cut off the gas and vapour from the cylinder before the stroke commences, or allow the gas or vapour to enter the cylinder for the whole or a fixed portion of the stroke, thus ensuring that the quantity and proportions of gas, or vapour and air, supplied to the cylinder for an explosion shall be constant. To simplify the means whereby the mixed gases are exploded, they employ an oscillating cylinder, and let the oscillating motion itself work apparatus to cause the explosion of the mixed gases at the desired times. Exhaust and admission

valves are provided and operated in the usual or any desired manner. The usual and well-known means are provided for keeping the cylinder cool.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

MINERAL CORPORATION OF GREAT BRITAIN (Limited).—Capital 50,000l., in 100 shares. To acquire mineral property in England. The subscribers are:—E. Feltus, 11, Rue Laite, Paris; 10, A. Bulterne, Steeple, Departement Du Nord, France; 10, B. Bourtholle, Paris, accountant; 10, E. A. Maro-Carrien, Paris, engineer; 10, A. J. Crofts, 1, Finch-lane, clerk; 1, W. Arthur, 10, Holland-road, Kensington, merchant; 1, H. E. Vickers, Whitehall-place, accountant; 1.

CAROLINA MINING COMPANY (Limited).—Capital 25,000l., in 100 shares. To acquire certain mines in the mineral district of Carolina, Province of San Luis, Argentine Republic. The subscribers (who take one share each) are:—J. Fendelburgh, Buenos Ayres; A. S. Bowen, St. Neots, engineer; C. W. Barlow, 57, Piccadilly; C. Brownlow, 7, Mining-lane, merchant; T. Jacobs, Graceland Buildings, commission agent; J. C. Rait, Marylebone-lane, printer; J. Thornburn, Pleydale-street.

BRISTOL AND WEST OF ENGLAND CANADIAN LAND MORTGAGE AND INVESTMENT COMPANY (Limited).—Capital 500,000l., in 250 shares. For the investment of capital in various descriptions of property in Canada. The subscribers (who take 100 shares each) are:—W. H. Miles, Ham Green, Somerset; C. W. Edwards, 90, Redcliffe-street, Bristol; L. Fry, Clifton; J. Lucas, Bristol; M. R. King, Bristol; W. Smith, Bristol; E. J. Thomas, Bristol.

NATIONAL FIRE INSURANCE CORPORATION (Limited).—Capital 1,000,000l., in 50 shares. To take over the business of the National Fire Insurance Corporation (Limited), now in voluntary liquidation. The subscribers (who take one share each) are:—H. Loft, Mount street, Grosvenor-square; W. H. Warner, Mount-street; E. M. Barry, 24, Oxford-square; G. Goldney, 46, Hill-street, Berkeley-square; F. Mortimore, Eccleston square; J. A. M. Coke, 14, Penbridge-square; H. A. Hunt, 54, Eccleston-square.

AUSTRALIAN LAND AND INVESTMENT TRUST (Limited).—Capital 1,000,000l., in 100 shares. To invest in property in Australia. The subscribers (who take one share each) are:—J. M. Stuart, 12, Queen Victoria-street; W. Scott, Glasgow; J. M. Wright, 73, Jermyn-street; John Watson, 70, Bishopsgate-street; John Beattie, Teddington Park; J. E. Power, 35, Cranfield-road, Brockley; W. W. J. Walker, Melbourne.

EQUITABLE ASSURANCE COMPANY (Limited).—Capital 50,000l., in 10 shares. To carry on the business of an accident assurance and guarantee company. The subscribers are:—W. C. Morris, Bridge Chambers, Blackfriars, 10; F. Sme, 172, Holloway-road; H. Scott, New Southgate; 10; John Jennings, 4, Belvoir Villas, Tufnell Park; T. A. White, 1, King's Arms-yard; T. W. Nichols, Muswell Hill; J. Slater, Forest Gate.

MOTIVE POWER AND TRACTION COMPANY (Limited).—Capital 55,000l., in 100 shares. To acquire the right to work the letters patent granted to Major F. E. Beaumont, for improvements in motor engines worked by compressed air. The subscribers are:—F. E. B. Beaumont, 7, Grosvenor Mansions; F. J. Bolton, 18, Grosvenor Gardens; S. T. J. Bewick, Haydon Bridge, Northumberland; H. J. Jacey, Newton Hall, Stockfield-on-Tyne; J. Hick, M.E., Mytton Hall, Whalley; D. Brown, Halmstad.

ROCKLEY HALL AND WHATLEY COLLIERIES AND BRICKWORKS (Limited).—Capital 100,000l., in 50 shares. To take over the Rockley Hall Collieries, in Warwickshire. The subscribers are:—G. W. Woodbury, Horne Hill, S.E., gentleman; 20; C. Barles, Old Quebec-street, Hyde Park, gentleman; 10; J. Gutteridge, J.P., Dunstable, Beds; 10; C. Seymour, Kingswood-road, Fenge; 10; J. H. Dorrer, 184, Kensington Park-road, solicitor; 5; W. Johns, 6, Bedford-place, Croydon; 5; G. J. Miller, Bute Lodge, Turnham Green, clerk; 5.

ATLANTIC STEAM NAVIGATION COMPANY (Limited).—Capital 500,000l., in 100 shares. To carry on the general business of a steam navigation company. The subscribers (who take 100 shares each) are:—G. H. Morrison, 6, Dale-street, Liverpool; A. M. Turner, Dale-street, Liverpool; T. H. Jamay, Water-street, Liverpool; W. Imrie, Water-street; E. V. Harland, Belfast; C. W. Kellogg, Liverpool; L. Young, 64, Cornhill.

PROPRIETARY HOUSE AND LAND CORPORATION (Limited).—Capital 100,000l., in 50 shares. To acquire property and carry on business as a land and building company. The subscribers (who take 20 shares each) are:—J. G. Martin, Cavendish Villa, Ealing; J. Harcourt, Great Berkhampstead; C. Fulmer, Twickenham; H. Potter, Barnes; H. B. Saunders, Bridge-street, Blackfriars; F. Warren, 36, Parliament-street; C. Woodroffe, Combe, Surrey.

BOLTON ROAD QUARRY COMPANY (Limited).—Capital 30,000l., in 50 shares. To acquire a quarry at Wavertree, Lancashire. The subscribers are:—J. G. Martin, Castle-street, Liverpool; 10; W. Bullen, South John-street, Liverpool; 10; T. W. Sheen, North John-street, Liverpool; 10; J. W. Broadbent, Liverpool; 1; R. Martin, Broadlaw Hill, Liverpool; W. Broadhurst, North John-street, Liverpool; 5; W. W. Piek, Liverpool.

INDIAN CO-OPERATIVE AGENCY (Limited).—Capital 20,000l., in 10 shares. To carry on the general business of a co-operative supply company. The subscribers are:—W. Drew, Centra Park, S.E.; 20; T. Wollam Holland, Cliftonville, Brighton; 100; L. Cowan, Bedford; 200; T. M. Raynsford, Barnet; 50; T. W. Mercer, Hurstpierpont; 50; G. Donnell, Kingston-on-Thames; R. Moore, 1, Walbrook.

COMMERCIAL MILLS, BLACKBURN, COMPANY (Limited).—Capital 50,000l., in 100 shares. To carry on business as cotton-spinners, &c., in Lancashire. The subscribers, who take one share each, are:—W. Speedy, Chorley; J. Speedy, Chorley; H. Simpson, Kirkham; J. C. Fisher, Blackburn; G. Shaw, Oldham; C. W. Hoone, Accrington; J. R. Beard, 7, George-street, Manchester.

IMPROVED INJECTOR.—The injector is according to the invention of Mr. JOSEPH HALL, of Manchester, composed of a casted body, made of brass or of any other suitable metal. It is provided with a nozzle immediately in front of an orifice leading to an air chamber. The latter is fitted with a valve, operating automatically, whereby the air is relieved and a vacuum created prior to the fluid being forced into the receiver by the pressure of steam through the centre of nozzle. The injector is placed overhead in the fluid. Steam enters through the supply pipe and creates suction by the escape of the air at automatic valve, and the energy of steam forces the water through the orifice into the receiver, and then into the boiler through the back pressure valve, the water and steam having sufficient energy imparted to open same.

TELEPHONIC COMMUNICATION.—The vibrations of the atmosphere, which result from the human voice or from any musical instrument, are made to increase or lessen the electric force upon a line by opening or closing the circuit, or by increasing or lessening the intimacy of contact between conducting surfaces placed in the circuit at the receiving station. The electric action of one or more electro-magnets causes a vibration in a tympan, and produces a sound, but this sound is greatly increased by mechanical action. Mr. T. A. EDISON, of Menlo Park, New Jersey, has discovered that the friction of a point, already in contact with a properly prepared and slowly moving surface, is much increased or lessened by the strength of the electric wave passing at such point of contact, and from this variation in the friction a greater or less vibration is given to the mechanism that produces or develops the sound at the receiving station, thereby rendering clear and distinct the sound received, and which otherwise would not be audible. In the receiving portion of the instrument the tympan is acted upon directly by an electro magnet or through an armature, or the tympan is provided with an arm extending out over a slowly moving surface or cylinder, and the electric current

passing at the point of contact increases or lessens the friction, and produces the vibration of the arm and tympan in proportion to the difference of friction developed between the arm and moving surface by the passage and cessation of the current through the chemically prepared paper, preferably moistened with a salt of mercury and an alkali. This feature is capable of very extended development in telegraphy, the clearness and extent of sound produced by the receiving tympan exceeds anything heretofore attained in acoustic telegraphs.

UNIVERSAL SYPHON PUMP.

The enormous advantages to be obtained by the more judicious utilisation of the principle of the syphon was explained by Mr. Moutais in the *Mining Journal* many years since, and although the results achieved did not quite fulfil the inventor's anticipations, enough was done to convince him that the principle was correct, and that it only required development. Mr. G. J. Hambruch, of Berlin, has now made some further improvements in the same direction by applying a syphon-like column of water for the purpose of lifting water, and also for securing an air motion, and likewise claims an improved mode of steam condensation, by which the water column takes the action of an air-pump. A pipe with unequal arms is placed vertically, and fixed to the ground; the pipe can be made of sheet or cast-iron, or even wood for pumps of small draft. The semi-circular connection of the arms is of the most convenient form, the water not being exposed to a great contraction in its flow, but other forms of connection can be used. The water arm is mounted at its top with a valve which opens to the inner side of the pipe, and another valve which opens to the outer side, carrying further at the top a reservoir to receive the lifted water, which from thence flows away through the delivery pipe. In this reservoir is placed a condenser, which is fixed or screwed with its lower part to the outer valve. The condenser is, therefore, put in connection with the water arm, but the communication takes place only on one side, while another valve opens only at the bottom, and prevents the water in the pipe from entering the condenser. There is a pipe fixed to the reservoir, which connects the condenser with a revolving slide-valve. The steam arm is closed by a cover, which carries a semi-circular box, the latter communicating with the inside of the arm through an opening made in the cover. About the centre of the box is fixed horizontally the revolving slide-valve, which is constructed on the Wilson principle, and is therefore unloaded. The axis of the revolving slide-valve traversing the box carries a sector-shaped weight, to which a rod is fixed, and passes into the steam arm through the opening in the cover. This rod bears at its top a collar and at its end a nut. With it is connected the float or tell-tale valve, made of wrought-iron, which nearly fills in diameter or width the steam arm, nevertheless bears sufficient clearance to move freely up and down. A pipe connects the revolving slide-valve to the boiler, and another pipe to the condenser. The steam passes from the pipe into the channel of the shaft, and enters from there into the box and the arm, while other channels communicating one with the other through an opening, and being always in communication with the pipe, put the arm in connection with the pipe when the slide-valve is in the position caused when the rod has been altogether drawn downwards, and the shaft has been turned to the right; while the former position takes place when the shaft is turned to the left, and the rod is placed in its highest position, it is clear that any kind of unloaded slide-valve, piston, or valve gear can be used.

For putting the apparatus in operation both arms and the receptacle are filled with water, so that the float is lifted. The buoyancy of the float, which pushes against a collar, turns the revolving slide valve to the left, establishing thereby the communication between the steam pipe and the arm. The steam enters the arm, pressing against the liquid contained in the arm, as well as against the float, which is compelled to descend. In the same manner as the water column or liquid descends, re-ascends and enters through a valve into the reservoir, and is conveyed through the pipe. The float in its descent knocks against one of the nuts, draws the rod downwards, and turns the revolving slide valve to the right, establishing thereby the communication with the pipe, and consequently also with the condenser. The steam entering into the condenser condenses itself through the cold sides of the condenser, producing a vacuum in the arm. The valve being connected with the water reservoir where the water is drawn from the outer atmospheric pressure will now press the water into the pipe, from where it will flow through a valve enter into the arms, rising until the float knocks against the collar. It turns then the revolving slide valve to the left, establishing thereby the communication with the steam pipe. The steam presses again upon the column of water or other liquid, and the water formerly lifted flows away through the valve and pipe, and the so described action of the apparatus begins again. When the column of water descends in the arm the water in the condenser produced through the condensation goes through a valve into the pipe, the water column acting, therefore, as an air pump, keeping the condenser free of water. The lift of the apparatus depends upon the capacity of the vacuum in the condenser; it will, therefore, be necessary if the water has to be lifted to a great height—say, nearly to such a height as the atmospheric pressure is able to carry—to apply a condenser of appropriate large sizes.

APPARATUS FOR CUTTING COAL.—The object of the invention of Messrs. GIDLOW and ABBOTT, of Hollywood-Heaton, Lancashire, is to provide apparatus or appliances to facilitate the under-cutting of coal in mines, which shall be simple in construction, effective in operation, and economical in maintenance. For this purpose they employ in combination a worm wheel receiving motion from any convenient power, preferably from a compressed-air engine, to give motion to a toothed wheel or disc, which in its turn gives to-and-fro motion by means of a crank pin and connecting rod to a cutter bar working in guides. The framework for supporting this mechanism may be supported on wheels, so that it can be run along the face of the work to be cut; and retaining and other devices, such as are well known in coal-cutting machinery, may be adopted.

ASBESTOS.

A NEW and INDESTRUCTIBLE ASBESTOS PACKING for steam joints and glands, possesses an unusual power of resisting heat, works efficiently under the highest pressure of steam, being practically indestructible. Apply to—
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AND 10, MARSDEN STREET, MANCHESTER.

PATENT

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5, PARK PLACE, NEW YORK, U.S.A.



The following extracts from the reports of Judges in awarding Medals:—

- "2. Its simple construction ensures durability, &c.
- "4.—The steam or air cushions at each end of cylinder effectually protect from injury.
- "5. Its having an automatic feed, giving it a steady motion, &c.
- "6. Its greater steadiness and absence of jar and vibration experienced in other drills, which is very destructive to their working parts, &c.
- "7. Its greater power is some FORTY PER CENT. in favour of the Ingersoll."

Medals awarded for several years in succession "For the reason that we adjudge it so important in its use and complete in its construction as to supplant every article previously used for accomplishing the same purpose."

Estimates given for Air Compressors and all kinds of Mining Machinery. Send for Illustrated Catalogues, Price Lists, Testimonials, &c., as above.

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MANUFACTURE RAILWAY CARRIAGES AND WAGONS OF EVERY DESCRIPTION, FOR HIRE AND SALE, by immediate or deferred payments. They have also wagons for hire capable of carrying 6, 8, and 10 tons, part of which are constructed specially for shipping purposes. Wagons in working order main-tained by contract. MANUFACTURERS also of IRONWORK, WHEELS, and AXLES.

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BICKFORD'S PATENT FOR CONVERTING CHARGE IN **SAFETY FUSE** FROM THE BLASTING ROCKS, &c.

Obtained the PRIZE MEDALS at the "ROYAL EXHIBITION" of 1861; at the "INTERNATIONAL EXHIBITION" of 1863 and 1874, in London; at the "IMPERIAL EXHIBITION" held in Paris, in 1865; at the "INTERNATIONAL EXHIBITION," in Dublin, 1865; at the "UNIVERSAL EXHIBITION," in Paris, 1867; at the "GREAT INDUSTRIAL EXHIBITION," at Antwerp, in 1868; TWO MEDALS at the "UNIVERSAL EXHIBITION," Vienna, in 1873; and at the "EXPOSITION NACIONAL ARGENTINA," Cordova, South America, 1872.

BICKFORD, SMITH AND CO., of TUCKINGMILL, CORNWALL; ADELPHI BANK CHAMBERS, SOUTH JOHN-STREET, LIVERPOOL; and 85, GRACECHURCH-STREET, LONDON, E.C.; MANUFACTURERS AND ORIGINAL PATENTERS OF SAFETY-FUSE, having been informed that the name of their firm has been attached to fuse not of their manufacture, beg to call the attention of the trade and public to the following announcement:—
EVERY COIL OF FUSE MANUFACTURED by them has TWO SEPARATE THREADS PASSING THROUGH THE COLUMN OF GUNPOWDER, and BICKFORD, SMITH, AND CO. CLAIM SUCH TWO SEPARATE THREADS AS THEIR TRADE MARK.

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BLASTING FUSE FOR MINING AND ENGINEERING PURPOSES.

Suitable for wet or dry ground, and effective in tropical or Polar climates.

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THACKRAH'S DAILY SHARE-LIST, issued EVERY EVENING from THACKRAH'S SHARE AGENCY, 29, NORTHGATE, HALIFAX, gives current prices of Shares in—John Croxley and Sons (Limited), Carpet Manufacturers, Halifax; H. Briggs, Son, and Co. (Limited), Whitwood Collieries, Norton Brothers and Co. (Limited), near Huddersfield; M. Oldroyd and Sons (Limited), Dewsbury; Boileau, Vaughan, and Co. (Limited); New Shariston Collieries Company (Limited); Yorkshire Boiler Insurance Company (Limited); the Goole Steam Shipping Company (Limited); and more than 250 other companies.

Persons may ensure the regular delivery of their shares, through the post, of this List or the following yearly payments, inclusive of postage:—Once a month, 2s. 6d.; twice a month, 5s.; once a week, 10s.; twice a week, 21s.; daily, 42s.

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A fixed sum in case of death by accident, and a weekly allowance in the event of injury, may be secured at moderate premiums.

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Patent Improved Blake Stone Breakers.

GUARANTEED NO INFRINGEMENT OF ANY PATENT.

AWARDED PRIZE MEDAL,

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Formerly Manufacturers for the late H. R. Marsden, having made for him in less than four years 336 Stone Breakers.

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Reduced prices of this Rock Drill, Nos. 1 and 2, £32 and £34.
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IMPROVED AIR COMPRESSORS.

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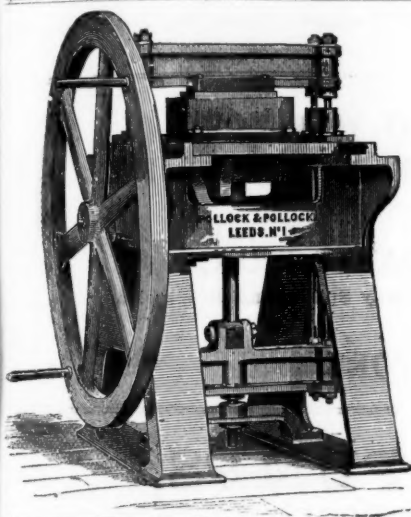
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HIGH-PRESSURE SCREW ENGINES

COMPOUND SCREWS ENGINES.

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ILLUSTRATED AND PRICED CATALOGUES ON APPLICATION.

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Boiler Tubes, Hydraulic Tubes,

Sluice Valves, Hydrants,

Stop and Draw-off Cocks,

Boiler Mountings,

Safety Valves, Pumps, &c.

IMPORTANT.

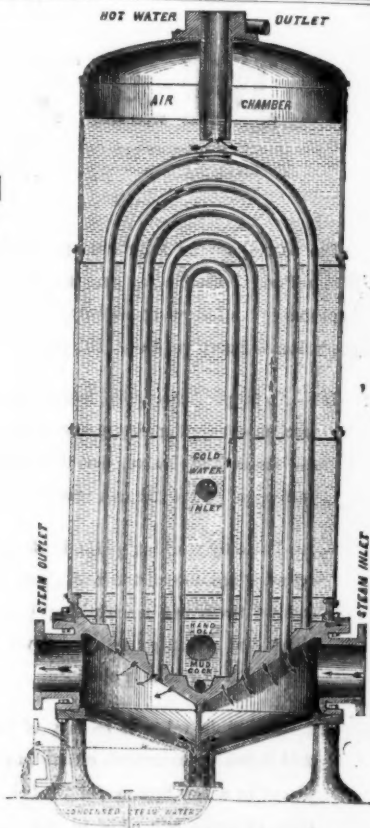
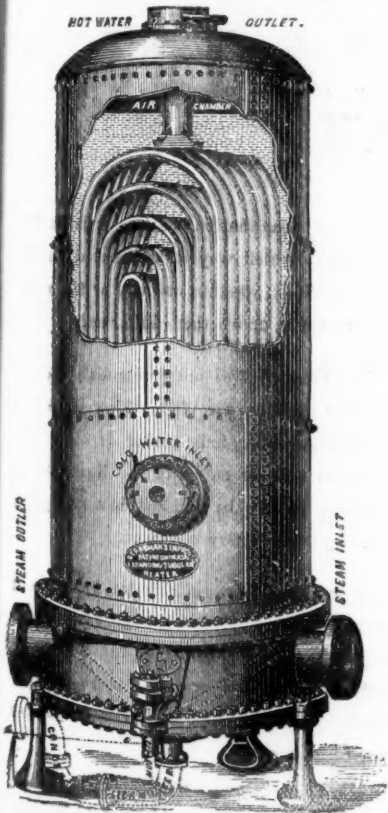
JOSEPH WRIGHT AND CO.

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NEPTUNE FORGE ENGINE

AND BOILER WORKS,

TIPTON, STAFFORDSHIRE.



Having purchased the Engineering Business lately carried on by R. BERRYMAN AND CO., at 23, Congreve-street, Birmingham, and 28, Wilson-street, Finsbury-square, London, have removed the whole to their Works at TIPTON, to which place ALL COMMUNICATIONS SHOULD IN FUTURE BE ADDRESSED, and where the BERRYMAN HEATER can be seen at work, and in every stage of manufacture.

Being the SOLE MAKERS and PATENTEES of these CELEBRATED COAL SAVERS and EXHAUST STEAM UTILISERS, and having remodelled and greatly improved them, adding largely to their HEATING SURFACE and WATER CAPACITY, J. W. and Co. have put down a special plant, which includes an entire new set of improved patterns, enabling them to offer these FEED WATER HEATERS to the public at

GREATLY REDUCED PRICES.

This arrangement of BRASS TUBES of a great length giving an enormous HEATING SURFACE makes this HEATER not only the MOST POWERFUL ever invented, but its FIRST COST PER FOOT OF HEATING SURFACE IS LESS THAN HALF THAT OF ANY OTHER. It will condense the whole of the Exhaust Steam from the Engine if required, and entirely does away with the NOISE and BACK PRESSURE from exhaust pipes.

ALL THE TUBES ARE OF SPECIALLY PREPARED SOLID DRAWN BRASS AND COPPER; both ends are expanded into the bored holes of the same Tube Plate, METAL TO METAL, and every tube is free to expand and contract independent of each other. Leakage is impossible, as, when the tubes are once fixed, nothing short of cutting out will remove them. No scurf adheres to the tubes because of the difference of expansion between SCURF and BRASS. The inside of the Heater can be washed out by means of the mud cock and hand hole whilst at work.

Only one pump or injector is required, and as the Heater is placed between the pump and the boiler, the water is forced, COLD, into it, and passes out at the top HOT into the boiler direct. Where the WATER WORKS PRESSURE is sufficient no pump or injector is needed.

The water being heated to BOILING POINT UNDER PRESSURE in the Heater, a saving of from 20 per cent. to 25 per cent. in fuel is effected; the disastrous results of grease in boilers are also avoided, the sewage and other loose matter in the water being deposited in the Heater, the acids are liberated there instead of in the boiler.

Every part can be lined with BRASS, COPPER, or LEAD, as may be required in special cases for heating water or any kind of liquor in large quantities for CHEMICAL WORKS, BATHS, WASH-HOUSES, AQUARIA, GREENHOUSES, BREWERIES, WOOL WASHING, DYE WORKS, TANNERIES, &c., &c.; they will also HEAT AIR FOR CUPOLAS AND BLAST FURNACES, and are now at work as INTERHEATERS for compound engines with direct steam from the boiler with a further saving of 15 per cent.

The New Price List, with detail information, is now ready, and will be sent on application, together with an Illustrated Catalogue, with references and testimonials from Firms using FOUR HUNDRED AND THIRTY-THREE of these Heaters.

JOSEPH FENTON & SONS,

SYKES WORKS, SHEFFIELD, and 118, Cannon-street, LONDON, E.C.,
MANUFACTURERS OF
CRUCIBLE CAST STEEL CASTINGS,

HAVE PLEASURE IN CALLING THE ATTENTION OF THE MINING WORLD TO THEIR
Patent Method of Fitting up Cast Steel Wheels and Axles.

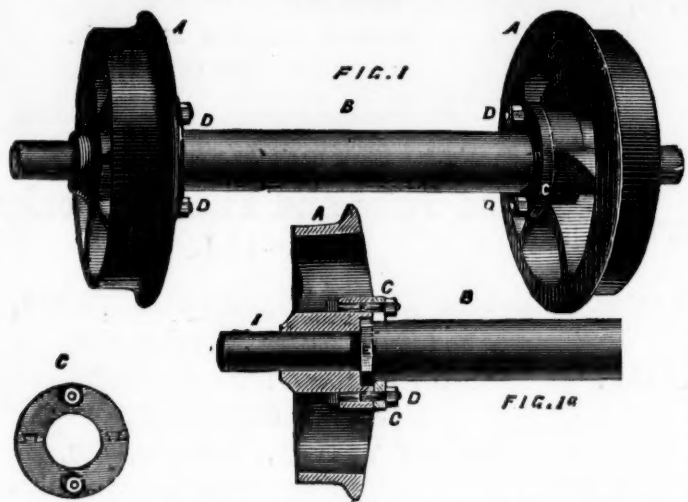
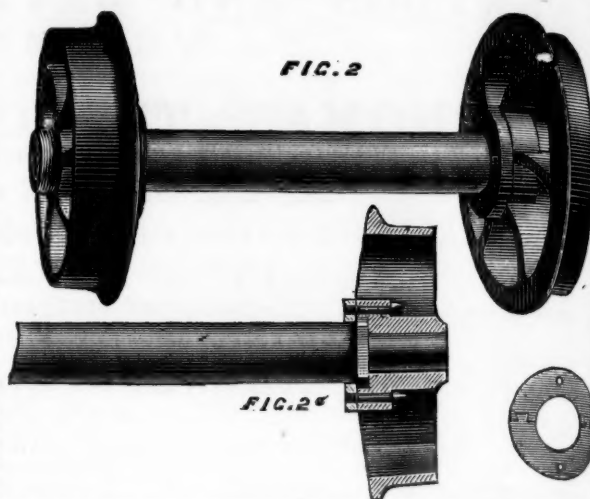


FIG. 1 and 1a show a longitudinal view and plan of a pair of cast steel wheels and axles fitted up for outside bearings. A A are the wheels; B is the axle; C C, the washers; D D, the bolts; E, the collar on axle B; and F, the recessed boss in the wheel.

The wheel is cast with a recessed boss in the inside, made to any shape, corresponding in shape and depth with a collar formed on the axle. Figs. 2 and 2a show a longitudinal view and plan of a pair of cast steel wheels fitted up for inside bearings. The washers are secured to the boss of the wheel in outside bearings by bolts and nuts, and in inside bearings by set screws.

The advantages of the above system are:—A, the singular simplicity of fitting—enabling any inexperienced person, with the aid of a spanner or screw-driver, to detach the wheels from the axle or fit them together in a very short time. B, perfect solidity, the wheels and axles becoming as one piece. C, durability, no need of putting the wheels or axles into the fire, under any circumstances, which is so detrimental to wheels, rendering them remarkably brittle, and which under other systems are detached from the axle by the aid of fire. D, economy in fuel and wages, saving hundreds of pounds yearly to large coal owners. The



important desiderata secured by this invention of simplicity (so often wanted in patents), solidity, durability, and economy, have not only been amply illustrated by the technical journals interested in the progress of mining operations in this country, but have at once been fully recognised by leading authorities in the mining world.



BOLTS, NUTS, AND COACH SCREWS.

ARCHER AND HARPER,

PROVIDENCE BOLT AND NUT WORKS, THE GREEN, DARLSTON,

Manufacturers of all kinds of Shipbuilders', Engineers', Coach, Wagon, and Fish Bolts: Coach Screws; Railway Spikes and Brobs; Ho-pressed and Forged Nuts, Rivets, Washers, &c., &c.

SHIPBUILDERS' AND RAILWAY STORES' CONTRACTORS.



COLEBROOK'S PATENT STEAM PUMPS, FOR HIGH OR LOW LIFTS AND GENERAL PURPOSES.

SOLE MAKERS,—

MAY AND MOUNTAIN,

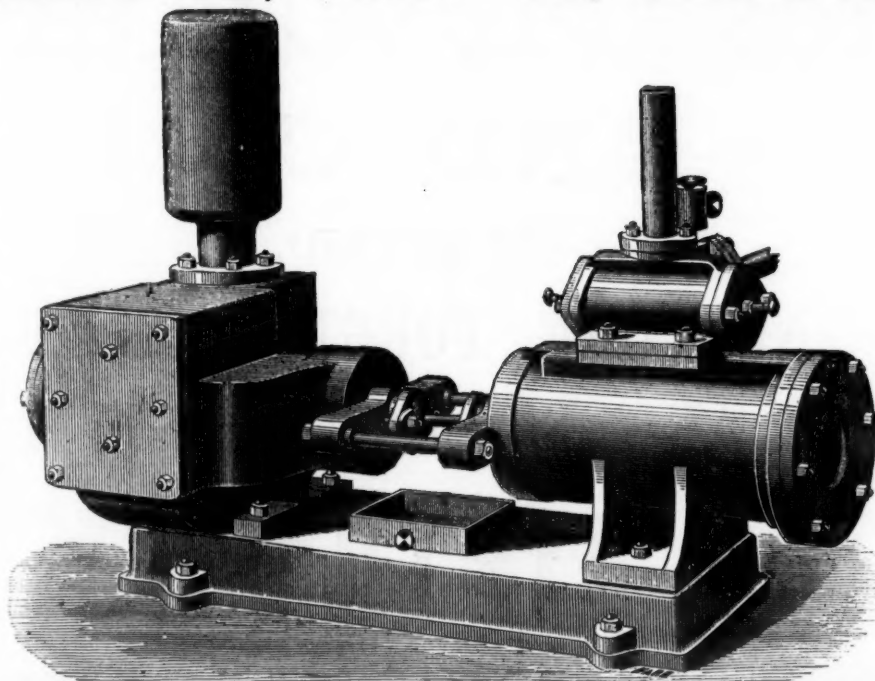
BERKLEY ST., BROAD ST., BIRMINGHAM.

The accompanying Engraving represents a Steam Pump, suitable for general purposes; it possesses the following advantages over any other Steam Pump yet before the public:—

1st.—No tappets, eccentrics, levers, or other mechanical appliances are used to actuate the steam slide valve, but this office is performed by the exhaust steam.

2nd.—The only working parts in the steam cylinder are the piston and slide valve, and as there are no working parts in either the piston or cylinder covers, the full length of stroke is obtained.

3rd.—The slide valve is so easy of access that it can be examined, cleaned, and replaced in a few minutes, and it is impossible to make any error in replacing it



after examination, because it is immaterial which way it is inserted in the valve-box, whether one way or the other upwards, or whether end for end.

The Pump Valves are Colebrook's Patent, and are made in one piece. They are either of canvas, leather, india rubber, or other material, to suit the nature of the liquid to be pumped, and can be replaced in a very short time by any ordinary workman.

These Pumps are suitable for hot or cold water, hot or cold wort, sewage, ammoniacal liquor, tar, &c., and are adapted for use in breweries, chemical works, collieries, paper mills, dye-works, brick-yards, and for almost any other purpose.

SIZES AND PRICES OF COLEBROOK'S PATENT STEAM PUMPS.

Diameter of Steam Cylinder.....Inches	1½	3	3	3	3	4	4	4	4	5	5	5	6	6	6	6	7	7	7	7	8
Diameter of Pump Cylinder.....Inches	1	1½	2	2½	3	2	2½	3	4	3	4	5	3	4	5	6	3	4	5	6	7
Length of Stroke.....Inches	6	12	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Price	£12	£16	£17	£18	£19	£10	£20	£22	£25	£23	£28	£32	£26	£33	£36	£41	£30	£38	£41	£45	£52

Diameter of Steam Cylinder.....Inches	8	8	8	8	9	9	9	9	9	10	10	10	10	10	10	12	12	12	12	12	12
Diameter of Pump Cylinder.....Inches	5	6	7	8	5	6	7	8	9	5	6	7	8	9	10	6	7	8	9	10	12
Length of Stroke.....Inches	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Price	£45	£50	£56	£65	£50	£55	£60	£70	£81	£62	£68	£70	£80	£95	£100	£80	£85	£90	£100	£115	£135

AWARDED THE PRIZE MEDALS AT LEEDS, MANCHESTER, AND WREXHAM EXHIBITIONS, 1875 AND 1876.

HADFIELD'S STEEL FOUNDRY COMPANY,

ATTERCLIFFE, SHEFFIELD,

DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

CRUCIBLE STEEL CASTINGS, for Engineering and Mining Purposes,

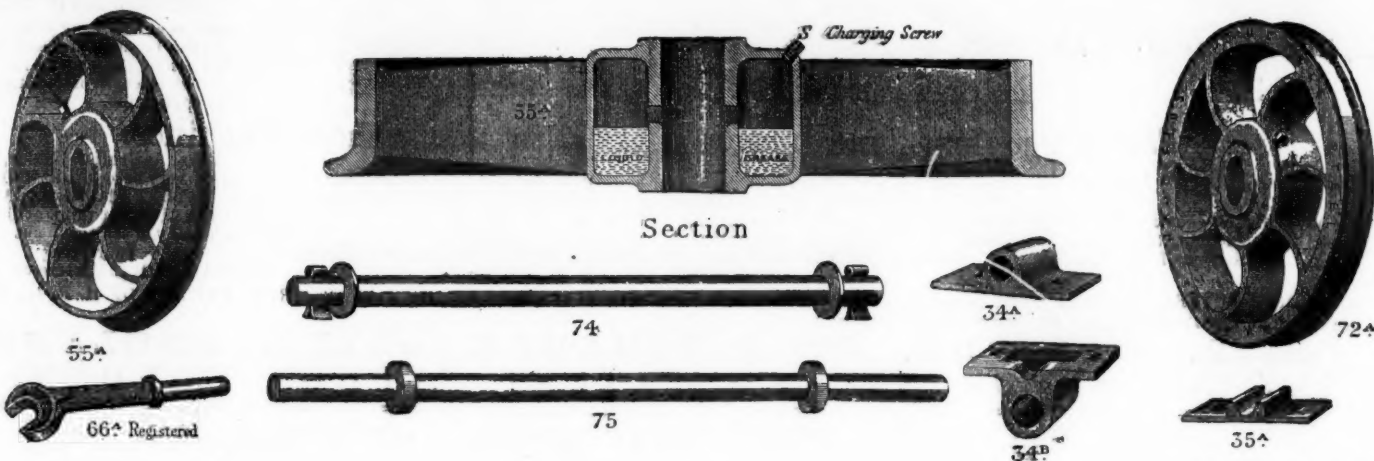
AND ARE THE SOLE MAKERS OF

Hadfield's Self-oiling Steel Wheels

(PATENTED).

These possess advantages held by no other wheels, and are specially adapted for Collieries, Ironstone Mines, Slate Quarries, Lead and Copper Mines, &c., &c., where LOOSE Wheels are used (i. e., those revolving upon their own axles). By the old system of lubricating loose wheels, it is well known this is attended with constant labour and excessive waste; and as so little of the grease or oil applied reaches the wearing surfaces, and as re-greasing can only take place at fixed parts of the workings, the bosses of the wheels and bearings of the axles soon become dry, and cut each other: thus causing enormous wear and tear, and necessitating extra labour, haulage power, and expense. These and numerous other defects are entirely remedied by these wheels, as will be readily seen from the following illustrations and advantages claimed.

N.B.—Price per Set of Wheels and Axles (ready for use) forwarded on receipt of—1. Diameter of Wheel on tread. 2. Width of tread. 3. Diameter of axle, also whether No. 74 or 75. 4. Rail gauge. 5. Rolling load.



The following are a few of the numerous Advantages claimed by the above Self-oiling Wheels:—

- 1.—Two-thirds (at least) less grease or oil is required than at present used by any known method of lubricating Mining Wagons, whether by hand, machine, or otherwise.
- 2.—These wheels effect a very great saving in haulage power; also wear and tear—being so constructed as never to allow the bearings to become dry. The revolving of the wheel leads out the oil as required, and immediately the wagon stops the lubricator ceases its action.
- 3.—No waste of grease can occur, no matter in what position the wagon may be placed, when discharging its contents (even if up side down); and when the wagons are not in use it is utterly impossible for any grease to escape, as it is all stored below the outlet (as shown above).
- 4.—When once these wheels have been charged with liquid grease (which can be done by any inexperienced person) they do not require any attention or re-greasing whatever for several weeks or even months afterwards, in proportion to the distance travelled.
- 5.—These wheels can be readily fixed to any description of either wood or iron curves now in use, whether the wheels are upon the inside or outside of the frame.
- 6.—They are exceedingly simple in construction, have no detail, and are not liable to get out of order.
- 7.—They possess great strength, durability, and extreme lightness, being made of CRUCIBLE STEEL.

Where FAST Wheels and Axles are adopted instead of Loose ones, as shown above, see our Illustrated Sheets of Drawings Nos. 2 and 3 of Crucible Steel Wheels and Axles, fitted complete by Hadfield's Patent Method, and Hadfield's Self-oiling Pedestals.

HARRIS'S PATENT WROUGHT-IRON WINDOWS.

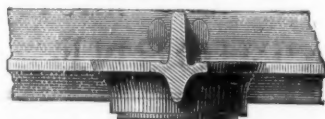
DOME AND OTHER ROOF LIGHTS, FLOOR AND PAVEMENT LIGHTS, ETC.



GREAT BRITAIN,
UNITED STATES OF AMERICA,

ARE STRONGER, SUPERIOR, AND CHEAPER
THAN ANY OTHER METAL SASHES YET
PRODUCED—COST LESS FOR GLAZING—
ARE AS CHEAP IN MANY CASES AS WOOD

PATENTED IN



FRANCE,
GERMANY, AND BELGIUM.

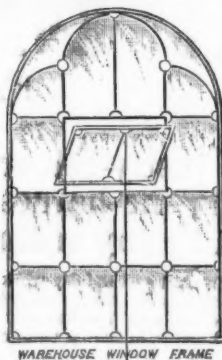
—CAN BE DESIGNED AND MANUFACTURED
TO SUIT ANY STYLE OF ARCHITECTURE
OR POSITION WHERE A WINDOW MAY BE
REQUIRED.

ARE BEING EXTENSIVELY USED IN—

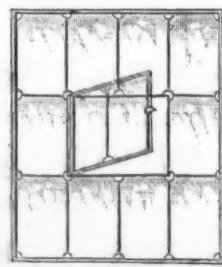


Private Houses,
Parsonage Houses,
Farm Houses,
Churches,
Chapels,
Schools,

Lunatic Asylums, &c.,
Public Buildings, Banks,
Wharves, Warehouses,
Factories, Mills,
Breweries, &c.,
Engine Houses.



WAREHOUSE WINDOW FRAME

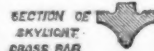


FACTORY OR MILL WINDOW FRAME

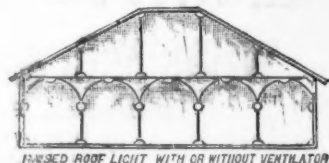
ILLUSTRATED CATALOGUES
ON APPLICATION.

ILLUSTRATED CATALOGUES
ON APPLICATION.

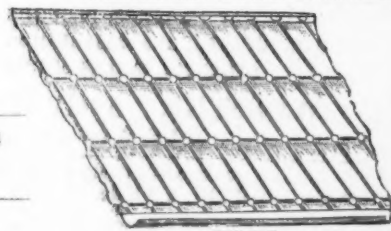
Security is obtained in
these Skylights with-
out Guard Bars, and
with less obstruction
to Light.



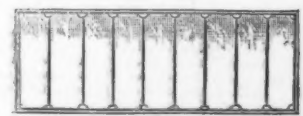
EXPORT.



ROOF LIGHT WITH OR WITHOUT VENTILATOR



SKYLIGHT



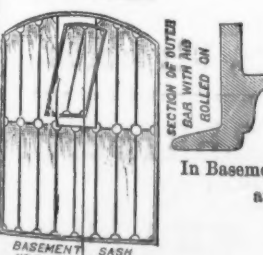
FLOOR OR PAVEMENT GRATING FOR GLAZING



PAIR OF SASHES
TO RUN WITH WEIGHTS



WATER-TIGHT
WINDOWS



BASEMENT SASH
NO GUARD BARS OR
SHUTTER REQUIRED



SECTION OF SHUTTER
BAR WITH ROLLER
ON

In Basement Storeys and Exposed Positions Shutters
and Guard Bars are dispensed with.

HOME AND

SOLE MAKER—J. T. HARRIS, Engineer, Ironfounder, and Manufacturer,

SAFE, STRONG ROOM, AND PARTY WALL DOORS, AND EVERY KIND OF CONSTRUCTIONAL AND BUILDERS' IRONWORK, LIFTS, HOISTS, ELECTRIC BELLS AND TELEGRAPHS, &c.
90, CANNON STREET, LONDON, E.C.; AND BEAUFORT IRONWORKS, BRISTOL.

H. R. MARSDEN, PATENTEE AND ONLY MAKER **BLAKE MACHINES,** OF THE WELL-KNOWN **ORE CRUSHERS AND STONE BREAKERS,**

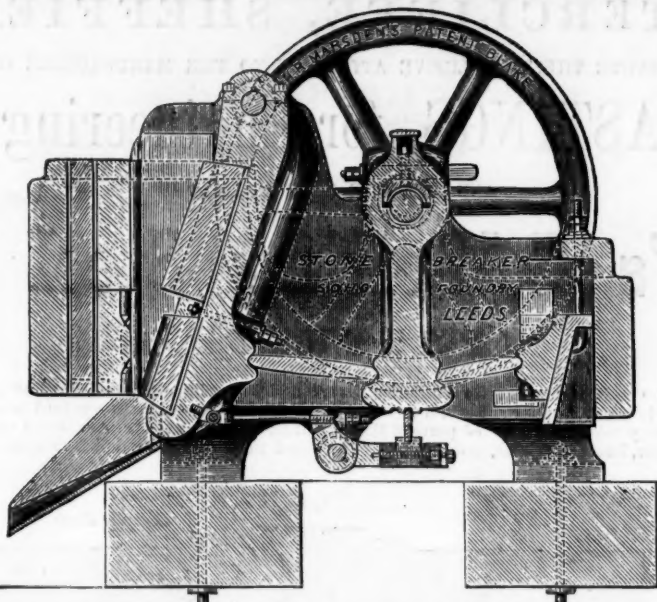
WITH THE
**New Patent Reversible
CRUSHING OR CUBING
JAWS,**

WHICH ARE CONSTRUCTED OF A PECULIAR
MIXTURE OF METAL, WEARING

**Four times longer than any
other.**

**60 GOLD AND
SILVER MEDALS.**

**OVER 2000 NOW IN
USE.**



For Crushing to any degree
of Fineness, or Breaking
to a required size.

**Her Majesty's Government
USE THESE MACHINES
EXCLUSIVELY,
ALSO ALL THE GREAT
Mining Companies of the
World.**

H. R. M. has long observed the want of cheaper
machines,
STONE AND ORE CRUSHERS,
And has at length, by means of improved appliances
for the production thereof, been enabled to reduce
the prices, yet keep up at the same time the well-
known strength of construction. Reduced prices
on application.

FIFTY per Cent., and upwards, saved by using these Machines.

TESTIMONIAL FROM MESSRS. JOHN TAYLOR AND SONS.

DEAR SIR,—We have adopted your Stone Breakers at many of the mines under our manage-
ment, and are pleased to be able to state that they have in all cases given the greatest satisfac-
tion. We are, yours faithfully,
H. R. Marsden, Esq.

6, Queen-street-place, May 10, 1877.

JOHN TAYLOR AND SONS.

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**H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.
ONLY MAKER OF SAULT'S PATENT SYPHON CONDENSER.**

TO COLLIERY AND MINE OWNERS.

R. HUDSON'S PATENT STEEL CORVES OR "TRAMS."

Patented July, 1875, and January, 1877.

Entire new principle, saving three-quarters to 2 cwt. "dead" weight per corve. Will hold 2 to 3 cwt. more coal than the ordinary kind, without increasing the outside dimensions. Adopted by—
Messrs. THOMPSON, WISE, & Co., Barry Port, South Wales. Messrs. R. HOLLIDAY and Sons, Ardsley, near Wakefield.
Messrs. DYMOND'S Liversedge Coal Company, near Leeds. HARDWICK COLLIERY Co., Clay Cross, near Chesterfield.
Messrs. W. ACKROYD and Bros., Morley, near Leeds. WEST YORKSHIRE IRON AND COAL Co. (Limited), Tingley, near Leeds.
Messrs. CLAYTON and SPEIGHT, Farnley, near Leeds. WM. BAIRD and SON, Coatbridge, near Glasgow.
Messrs. JAS. WORMALD and Sons, Rawdon, near Leeds. BETTISFIELD COLLIERY COMPANY, Bagillt, Wales.
KINGSWOOD COAL AND IRON Co., near Bristol. EDFOURD COLLIERY COMPANY, near Bath.
MIDDLETON COLLIERY Co., near Leeds. | NEWTON COLLIERY, near Castleford. | Messrs. RUSHFORTH and Co., Adwalton, near Leeds. | Messrs. JAS. FUSSELL, Sons, and Co., Frome, Somersetshire.
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Are NOW PREPARED to SUPPLY their DRILLS, the ONLY
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MINES of CORNWALL. At DOLCOATH MINE, in the
HARDEST known ROCK, a SINGLE MACHINE has, since
its introduction in July, 1876, driven MORE THAN THREE
TIMES the SPEED of HAND LABOUR, and at TWENTY PER
CENT. LESS COST PER FATHOM.

In ordinary ends two machines may be worked together,
and at a proportionately increased speed. They are strong,
light, and simple, easily worked, and adapted for ends and
stopes, and the sinking of winzes and shafts.

The company are also prepared to SUPPLY COMPRESSORS,
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Apply to—

**LOAM AND SON,
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IMPROVED STEEL WIRE FOR ROPES.

WEBSTER & HORSFALL,
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FOR COLLIERIES,

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